

Oil and Gas Investor

AUGUST 2021



Following a chilly, choppy year for dealmaking, the A&D market heats up.

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<p>UNDISCLOSED</p> <p>NORTH AMERICAN TRANSPORTATION AND SERVICE PLATFORM</p> <p>CORPORATE CARVE OUT</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p>INTREPID</p> <p>HAS ACQUIRED CERTAIN ASSETS OF</p> <p>gyrodata</p> <p>Financial Advisor</p>	<p>\$270 MILLION</p> <p>elkpetroleum</p> <p>ADVISOR TO THE AD HOC CROSSOVER LENDER</p> <p>Financial Advisor</p>	<p>\$350 MILLION</p> <p>VIPER Energy Partners</p> <p>FOLLOW-ON OFFERING</p> <p>Co-Manager</p>	<p>UNDISCLOSED</p> <p>PETROFLOW</p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>												
<p>UNDISCLOSED</p> <p>Excalibur Resources, LLC</p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p>EAGLE FORD MINERALS PLATFORM</p> <p>PRIVATE PLACEMENT OF EQUITY</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p>AETHON</p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>\$28 MILLION</p> <p>VIKING MINERALS</p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p>ROSEWOOD RESOURCES</p> <p>JOINT VENTURE TRANSACTION</p> <p>Financial Advisor</p>												
<p>ENERGY GROUP KEY STATISTICS</p> <p>\$54+ Billion Aggregate Transaction Volume since 2009</p> <p>\$320 Million Average Transaction Size</p> <p>169 Transactions Closed since 2009</p>		<p>ENERGY GROUP AGGREGATE TRANSACTION VOLUME</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Volume (\$ in billions)</th> </tr> </thead> <tbody> <tr> <td>2011</td> <td>\$4.8</td> </tr> <tr> <td>2013</td> <td>\$18.5</td> </tr> <tr> <td>2015</td> <td>\$32.9</td> </tr> <tr> <td>2017</td> <td>\$42.0</td> </tr> <tr> <td>2020</td> <td>\$54.2</td> </tr> </tbody> </table>			Year	Volume (\$ in billions)	2011	\$4.8	2013	\$18.5	2015	\$32.9	2017	\$42.0	2020	\$54.2
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2020	\$54.2															

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A&D REFUELED

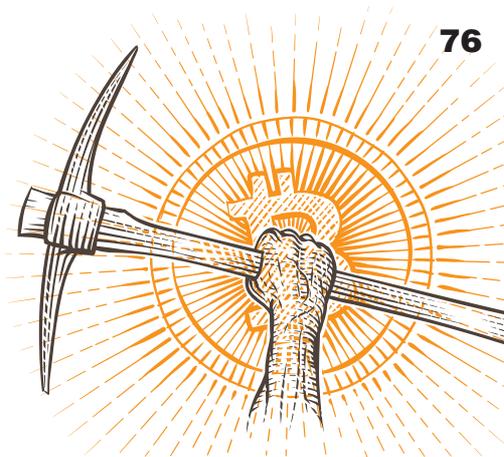
In the aftermath of 2020's large-scale mergers and corporate transactions, the deal pantry will likely find itself overflowing with asset buyers hungry for suitable acreage.

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Oil and gas will be extremely important to solving the energy transition and management need to get outside their comfort zone to attract today's generation to the sector, says Stephen Arbogast, director of the UNC Kenan-Flagler Energy Center.



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Certifications: - Certified Petroleum Geologist

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ABOUT THE COVER: Thanks to the M&A of last year, the 2021 to 2022 A&D engine is freshly refueled. Photo by Tom Fox.

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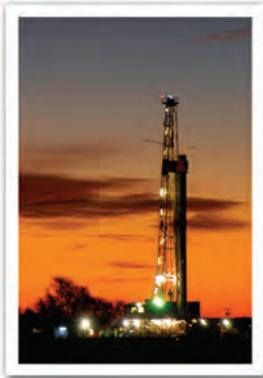
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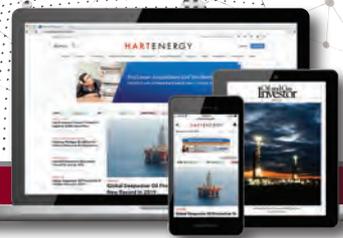
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LATEST CONTENT

Southwestern To Certify All Appalachia Production As Responsibly Sourced

By Emily Patsy, Senior Managing Editor

Southwestern Energy—considered first-movers in the ESG space—certified its first wells as responsibly sourced in 2017 through a partnership with Project Canary.

Shale Gas Giant EQT Doubles Down On ESG Goals, CEO Says

By Faiza Rizvi, Associate Editor

EQT Corp. announces \$75 million pledge and 2025 net-zero emissions target, as the U.S. shale gas producer aims to take leading role in the low-carbon future, CEO Toby Rice says.

Highpeak To Partially Power Permian Operations With Renewable Energy

By Hart Energy Staff

Through a partnership with Priority Power, HighPeak's drilling activity and operations in its Flat Top area in the Permian Basin in Howard County, Texas, will be powered with renewable solar powered energy.

Chesapeake Energy Aims To Take Lead In Responsibly Sourced Gas Movement

By Emily Patsy, Senior Managing Editor

A new partnership is set to make Chesapeake Energy Corp. the first company to certify natural gas production across two major shale basins, according to a company release.

Mesa II Makes First Acquisition Of Haynesville Shale Portfolio

By Hart Energy Staff

The portfolio acquired by Mesa II on July 8 consists of about 15,000 net royalty acres and is located in the core of the Haynesville in North Louisiana, according to Darin Zanovich, the company's president and CEO.

ONLINE EXCLUSIVES

Fighting The Fight: Diamondback Energy Shares Survival Tactics

By Velda Addison, Group Senior Editor

Public oil and gas producers will be judged on LOE and G&A plus their emissions profile, methane intensity and flaring, according to Diamondback CFO Kaes Van't Hof.

Midstream Projects: Gulf Coast Leads The Way In Second Quarter

By Joseph Markman, Senior Editor

Many projects away from the coast, however, are beset by delays.

What Houston Needs To Lead The Energy Transition

By Mary Holcomb, Associate Editor

To maintain its 'energy capital' status, the Houston region must play a leading role in driving a low-carbon future starting with its workforce, top energy executives say.

Hart Energy's Unconventional Activity Tracker

By Larry Prado, Activity Editor

Updated weekly, Hart Energy's exclusive rig counts measure drilling intensity. They exclude units classified as rigging up or rigging down, and also exclude rigs drilling injection wells, disposal wells or geothermal wells. They are designed to offer the most accurate picture of what is actually occurring in the field.

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PATH FORWARD: Impact Of \$100 Oil On U.S. Shale

Marshall Adkins, managing director and head of energy at Raymond James, shares why the fundamentals of oil have never been better than now plus his outlook for U.S. shale producers.

<https://www.hartenergy.com/exclusives/path-forward-impact-100-oil-us-shale-195165>



Energy ESG: How To Boost ESG Scorecard In The Oil Patch

Josh Haugan, sector manager for Aggreko's North America oil and gas group based in Houston, discusses what oil and gas operators can do in the field to boost their ESG scorecard plus how Aggreko can help.

<https://www.hartenergy.com/exclusives/energy-esg-how-boost-esg-scorecard-oil-patch-194992>



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STEVE TOON,
EDITOR-IN-CHIEF

Reducing methane emissions in operations to as close to zero as possible is a mandate the oil and gas industry should pursue immediately and vigorously. In a world obsessed with any and every release of greenhouse gas molecules into the atmosphere, this is one area where the fossil fuel sector can clean up its act quite easily and gain favor with the investment community by doing so.

“Everything is being viewed through a climate lens now,” said Jack Belcher, principal with Cornerstone Government Affairs, speaking at Hart Energy’s Carbon Management Forum in July, which explored why and how producers should address their emissions.

Belcher predicted that responsibly sourced gas, or RSG, could become regulated, climate disclosures to access public capital might be soon required by the SEC, and Congress will inevitably enact a carbon offset market. All based on your (eventually mandated) emissions reporting.

Persefoni co-founder Jason Offman said, “Keep one thing in the forefront: License to operate.”

Ryan Keys, co-founder of privately held Permian player Triple Crown Resources LLC, takes these directives to heart. Speaking at the DUG Permian & Eagle Ford conference, Keys emphasized that eliminating methane emissions is not just for large independents and majors, but is imperative for private operators to master as well.

“In the U.S., 10% of greenhouse-gas emissions are methane emissions. If we can put a big dent in this—and there’s no reason we can’t—then oil and gas will be leading the way on the reduction in greenhouse gas emissions.”

Keys touted that Triple Crown leads the Midland Basin as the lowest volume operator in flaring intensity, based on Enverus data, an achievement resulting from company culture. “We made minimizing flaring a priority from the top down,” he said. “We view it as a business risk—because it is.”

Triple Crown connects every well to gathering infrastructure before producing it. It contracts with a back-up gas purchaser for when the primary purchaser can’t take all the gas. It’s at a reduced rate, but “it’s much better than flaring.”

But more alignment is needed between upstream and midstream, he said, “As in, we need to be held jointly accountable for flaring. That would greatly reduce the flaring volumes in the industry.”

Despite being atop the leaderboard, Keys criticizes data used by the EPA to derive emissions as antiquated and of limited com-

parison. “The auditors aren’t actually measuring anything. They’re just multiplying emission factors by the type and amount of certain types of equipment we have or don’t have. And this needs to change if our industry is going to make a lot of progress here.”

To actually know emissions, he said, the industry has to measure them like it measures wellhead rates and pressures every day using SCADA. “You have to be data driven about this.”

To get a clearer picture of its emissions, Triple Crown hired Kairos Aerospace to fly over its facilities to monitor for leaks. With relatively new facilities in place, “we were confident our leaks would be negligible or nothing. Not even close.”

The survey revealed 1,300 Mcf/d of errant emissions, or about 4% of total gas production, primarily from newly installed tank batteries. “If this is happening to us, it’s likely happening to everyone else in the Permian.”

Surprisingly, Triple Crown discovered that fixing methane leaks was its most economic project as an oil and gas company. “If anyone has noticed recently, wet gas is worth a lot of money.”

The company spent \$24,000 on the survey and repairs. The value of the methane captured was \$139,000—in the first month—and \$400,000 after four months. “That’s a 20x ROI on captured methane in four months. That project paid out in five days. If we put methane capture on a level playing field with our other projects, this is our best project.”

The company is offering a white paper on how it accomplished this. “Our goal is to turn every EHS department at every oil and gas company into a profit center.”

Further, any new investments in the private equity space will prioritize emissions reduction, he said.

“This is more of a carrot than a stick. If we position ourselves as leaders in Scope 1 emissions, that positions us to be recipients of the limited amount of private equity capital left in the space. If others are interested in participating in that, then they’re going to have to prove emissions as well.”

Eventually, he said, the cost of capital is going to be directly or indirectly influenced by the industry’s stewardship on these metrics.

“If we’re really trying to reduce greenhouse gas emissions, then it starts with us,” said Keys. “We have to make a choice to prioritize this, and this will allow us to finally start contributing to or even controlling the narrative.”

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DEATH BY 1,000 VIRUSES



DARREN BARBEE,
SENIOR EDITOR

E&Ps are seemingly getting it together in 2021—certainly more than their bacchanal days of \$100-plus oil, when shale was considered invaluable and invincible.

These days, oil and gas companies are spendthrifts. Oil is on the cusp of \$80/bbl, but there's seemingly a disinterest in producing more except through well-by-well tune ups and plugging emission leaks.

Instead, they've taken up the mantle of scale, the virtue of low leverage and the most sanctified of vows, free cash flow. E&Ps have found Wall Street religion.

But it does beg the question: How will the ever competitive universe of oil and gas companies differentiate themselves?

Certainly, 2020 emerged as both a test and race to prop up environmental bona fides with billions of electronics cut down to make way for vaguely detailed ESG reports. But E&Ps finished their holy rites with a commitment to those three little letters that are now enshrined on every oil and gas brain and press release.

For deals, the environmental aspects that were once a part of the conversation are now as liable to lead discussions, joining cash flow, production and PV10 value as part of the metrics to justify a deal.

And, truthfully, the industry needed a little bit of a facelift after years of being called, fairly unjustly, the "Destroyers of the Earth." Even Robert Oppenheimer would be appalled.

ESG is now a factor in nearly every deal, given its due and diligence alongside geology, spacing and lateral lengths. How important it truly is, remains as mysterious as how ESG is actually measured. Generally, an acquisition means company X will be purchased and its emissions will go away.

And it looks poised to turn into just another generic metric, the way production equals cash flow and cutting opex and G&A equals scale. ESG is only different in that it's more about the feel-good factor, allowing investors to assuage their conscience as they park money in an energy sector currently outpacing the S&P 500.

So, job well done? Typically this is where one would relax, kick off his or her shoes, pour a glass of something red and woody and sigh a little relief.

Here though, we should heed the lessons of John McLain, who no sooner had balled up his bare feet on a California Christmas and then was at war with approximately 212 German bank robbers.

Already, it is clear that there is yet another standard to which oil and gas companies

will be held, perhaps more so than any other: cybersecurity.

It's convenient to point the finger at Colonial Pipeline's ransomware attack earlier this year. But this is largely perception.

Yahoo, Facebook and even credit agencies get hacked. But the immediate threat, while just as real, isn't as acutely felt.

Put simply, credit card numbers on the dark web sounds scary. Gasoline shortages on the eastern seaboard are much more in the here and now.

So how much should companies be considering cybersecurity when contemplating a deal? PwC is happy you asked.

In a recent presentation, PwC noted that date-dependent E&Ps are now even more exposed as they implement digital oil fields and rely on vast stores of data that are connected to previously unexposed legacy computer systems. Digitization has been good for the industry but also opened up risks.

Some private companies, for instance, are unregulated in these areas. Other E&Ps have rolled up less sophisticated companies in mergers, exposing acquirers to risk.

To hammer home the point, PwC noted in a June presentation that there were 900 reported breaches of companies in the first half of 2018 with 1.2 billion records breached. By 2021, the number of records breached surpassed 4 billion. Also, in the past three years, cyber breaches have gone from being published yearly to monthly this year.

And ransomware remains the main means of attack.

Colonial, with clear help from the U.S. government, was able to restore its systems and (probably) identify the bad guys.

So expect cybersecurity to be a larger part of the way in which deals are evaluated. PwC said that 82% of polled investors say they assess an organization's value higher if it has a robust cyber defense.

And dealmakers are likely interested to know if their acquisition targets have been hacked, compromised or otherwise sullied. In the digital world, meme is money. Just ask Colonial.

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We tend to forget in the U.S. how much the global economy impacts our daily lives. For the past several decades, the U.S. economy has experienced steady growth, largely due to low inflation, low interest rates, a strong dollar, cheap energy and robust global trade. These factors have helped grow the U.S. and global economies alike, especially in emerging markets such as Asia and Latin America.

The shale revolution created a new and unique situation whereby the U.S. was able to satisfy most of its own domestic energy consumption needs while also becoming a net exporter. This has been a game changer that freed the nation from the geopolitical and trade constraints associated with its traditional dependence on energy production from unstable, and sometimes hostile, parts of the world.

Sustained market dominance for natural gas will require increased LNG exports to the developing world where cheap, clean energy is needed to fuel economies, provide electricity to the masses, reduce air pollution and replace coal-fired generation in order to meet greenhouse-gas emissions goals. In order to meet this demand, however, the U.S. gas industry needs stability in global trade policy/geopolitics, regulation and access to capital.

On the geopolitical and trade front, relations with China, the largest potential LNG consumer, remain tense. Chinese aggression toward countries including Taiwan, Vietnam, the Philippines, India and Japan threatens regional stability and Sino-American relations more broadly.

In Europe, the European Commission took another step toward implementing the European Green Deal by introducing a legislative package that would help the EU achieve net-zero emissions by 2050. The proposal would place a carbon tariff on certain goods entering the EU that do not meet certain performance standards for climate/carbon. The proposal would also require significant emissions reductions in the power sectors and establish an emissions trading platform for the power and industrial sectors. Although the EU is bent on eliminating natural gas, its member countries continue to make significant investments in natural gas infrastructure.

In the U.S., energy and climate policies are taking aim at domestic oil and gas, threatening future offshore and public lands access, making pipelines more difficult to permit and build, and considering changes to fis-

cal terms that would make it more costly to develop domestic energy resources. Natural gas does appear to be somewhat of a dilemma for the Biden administration. While it is a clean fuel and pressure exists to support it, including from Democrats in the swing state of Pennsylvania and Sen. Joe Manchin (D-WV), it is also a fossil fuel and a greenhouse gas and remains subject to pressure from within the administration to thwart it.

Today's scrutiny by the Biden administration over environmental issues and performance could easily become tomorrow's stringent regulations.

Access to capital also continues to be an issue for the oil and gas industry globally, as investors continue to shun fossil energy for climate and ESG reasons and because shale production, in particular, has not been offering the types of returns investors are seeking. Issues regarding flaring, methane emissions, and perception over hydraulic fracturing further hamper investor interest. One bright spot has been rising commodity prices for oil and natural gas.

Against that backdrop, U.S. gas exports are reaching records again this summer which is great for the U.S. economy. In a visit to Houston this summer, U.S. Energy Secretary Jennifer Granholm talked about carbon capture and storage and hydrogen as ways to produce "natural gas that has been decarbonized," which in turn would make it more marketable for LNG export.

Recent developments highlighted by Granholm's statement and the EU's actions open the door for certified or responsibly sourced natural gas—gas that is certified as lower in carbon intensity and/or higher in ESG performance. In the past few weeks, there has been a proliferation of announcements about producers using certifiers like Equitable Origin and MiQ, which will certify natural gas for Chesapeake Energy Corp. in the Marcellus and Haynesville, and Project Canary, which is certifying gas for EQT Corp. and Southwestern Energy Co.

As the U.S. looks at developments in Europe, Asia and even its partners in North America, certified gas could enable U.S. gas exports to meet lower carbon standards and offset coal emissions globally. That's a story that the Biden administration might feel comfortable telling and one that could make them more willing to include natural gas as part of its global climate and energy diplomacy strategy.

EVENTS CALENDAR

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

EVENT	DATE	CITY	VENUE	CONTACT
2021				
Petroleum Alliance of Oklahoma Annual Mtg.	Aug. 5-7	Las Colinas, TX	Four Seasons	thepetroleumalliance.com
KIOGA Annual Convention	Aug. 15-17	Wichita, KS	Hyatt Regency	kioga.org
EnerCom Oil & Gas Conference	Aug. 15-18	Denver	Westin Downtown	theoilandgasconference.com
Offshore Technology Conference	Aug. 16-19	Houston	NRG Park	2021.otcnet.org
26th Annual Gas Compressor Association's Expo and Conference	Aug. 17-20	Galveston, TX	Moody's Garden Hotel	gascompressor.org
NAPE Summit	Aug. 18-20	Houston	George R. Brown Convention Center	napeexpo.com/summit
Energy Summit Golf Tournament	Aug. 23	Littleton, CO	Arrowhead Golf Club	coga.org
The Energy Summit	Aug. 24	Denver	Museum of Nature & Science	coga.org
Mexico Gas Summit	Sept. 7-8	San Antonio	St. Anthony Marriott Hotel	mexicogassummit.com
DUG Bakken and Rockies	Sept. 8		Virtual	dugrockies.com
Energy Workforce & Technology Council 2021 Annual Meeting	Sept. 15-17	Santa Ana Pueblo, NM	Hyatt Regency Tamaya Resort and Spa	energyworkforce.org
GPA Midstream Convention	Sept. 26-29	San Antonio	Marriott Rivercenter	gpamidstreamconvention.org
A&D Strategies and Opportunities	Sept. 28-29	Dallas	Fairmont Hotel	adstrategiesconference.com
Minerals Forum	Sept. 28	Dallas	Fairmont Hotel	adstrategiesconference.com
OGA Annual Conference	Oct. 4-6	Norman, OK	Embassy Suites	okgas.org
Digitalization in Energy Conference	Oct. 6		Virtual	hartenergyconferences.com
Energy Transition Investment Conference	Oct. 18-19	Houston	Westin Memorial City	EnergyTransitionConf.com
Executive Oil Conference	Nov. 3-4	Midland, TX	Midland County Horseshoe Arena	executiveoilconference.com
WEA Wildcatter of the Year	Nov. 6	Denver	Hyatt Regency at Colorado Conv. Ctr.	westernenergyalliance.org
North American Gas Forum	Nov. 8-10	Washington, D.C.	TBD	energy-dialogues.com/nagf/
25 Impactful Veterans in Energy	Nov. 10		Virtual	hartenergyconferences.com
Energy ESG Conference	Nov. 29	Houston	Westin Memorial City	EnergyESGConference.com
25 Influential Women in Energy Reception	Nov. 29	Houston	The Westin Houston, Memorial City	hartenergyconferences.com
Texas Hold 'em Tournament	Dec. 2	Houston	Four Seasons	ipaa.org
DUG East/Marcellus-Utica Midstream	Dec. 6-8	Pittsburgh	David L. Lawrence Conv. Ctr.	dugeast.com
Monthly				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Thursday, odd mos.	Forth Worth	Forth Worth Petroleum Club	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed., even mos.	Tyler, Texas	Willow Brook Country Club	getadam.org
ADAM-Houston	Third Friday	Houston	Brennan's	adamhouston.org
ADAM-OKC	Bi-monthly (Feb.-Oct.)	Oklahoma City	Park House	adamokc.com
ADAM-Permian	Bi-monthly	Midland, Texas	Midland Petroleum Club	adampermian.org
ADAM-Tulsa Energy Network	Bi-monthly	Tulsa, Okla.	The Tavern On Brady	adamtulsa.com
ADAM-Rockies	Second Thurs./Quarterly	Denver	University Club	adamrockies.org
Austin Oil & Gas Group	Varies	Austin	Headliners Club	coleson.bruce@shearman.com
Houston Association of Professional Landmen	Bi-monthly	Houston	Houston Petroleum Club	hapl.org
Houston Energy Finance Group	Third Wednesday	Houston	Houston Center Club	sblackhefg@gmail.com
Houston Producers' Forum	Third Tuesday	Houston	Houston Petroleum Club	houstonproducersforum.org
IPAA-Tipro Speaker Series	Second Wednesday	Houston	Houston Petroleum Club	tipro.org

Email details of your event to Brandy Fidler at bfidler@hartenergy.com.

For more, see the calendar of all industry financial, business-building and networking events at HartEnergy.com/events.



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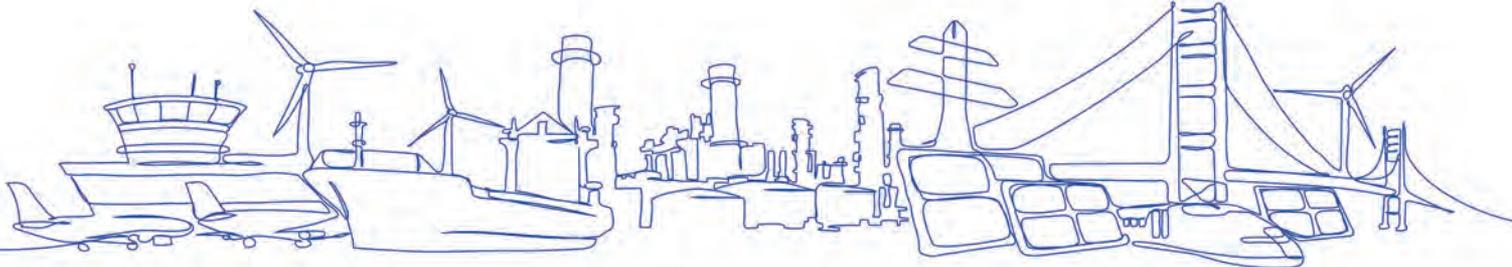
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Senior Debt

Junior Debt

Equity



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\$650,000,000

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June 2021

OASIS
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Joint Book-Running Manager

May 2021

 **genesisenergy**

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8.000% Senior Notes due 2027
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April 2021


MURPHY
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NewsWell

BP: Oil accounted for most of 2020's cut in energy demand

The stunning reductions in global energy usage in 2020 represent more than a simple pandemic-related aberration, BP Plc said July 8 in its annual "Statistical Review of World Energy." They also illustrate how the world is not on track to meet goals set by the Paris Agreement.

The study showed that:

- Primary energy usage fell 4.5%, the largest decline since 1945;
- Oil consumption was down 9.1 MMbbl/d or 9.3%;
- Natural gas consumption dipped 2.3%; and
- Coal consumption dropped 4.2%.

The decreased consumption resulted in a 6.3% reduction in carbon emissions, also the largest decline since World War II, which brought the output back to the level of 2011.

"The key feature of last year's fall in energy demand is that it was surprisingly big," Spencer Dale, BP's chief economist, said in his analysis. "Even after controlling for the collapse in economic activity, the decline in energy demand was close to twice the size of the 'predicted' fall: 4.5% compared with a predicted fall of around 2.5%."

Broken down, the decrease in oil demand accounted for about three-quarters of overall global demand decline, BP said. It was also the key factor in the drop-off of carbon intensity of the energy mix. From a forward perspective, these sharp reductions represent what the world would need to average on an annual basis for the next 30 years to achieve the goals of the Paris Accords. With the world in post-pandemic recovery, "There is a good chance that much of that dip proves transitory," Dale said.

"Last year's fall in carbon emissions was obviously driven by a huge loss in economic output and activity," he said. "A simple calculation comparing the fall in emissions with the decline

in world output equates to an implied carbon price of almost \$1,400 per tonne. Scarily high."

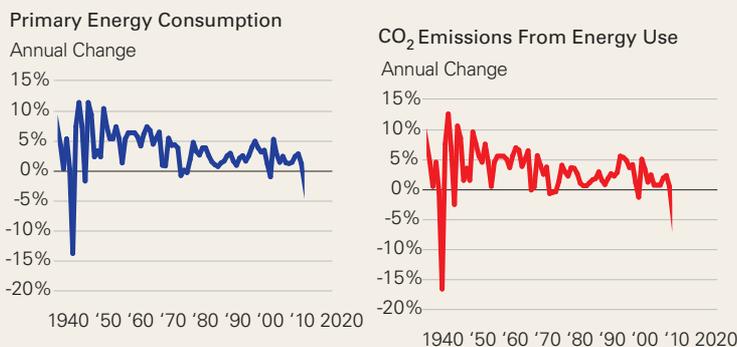
The challenge, he said, is to reduce emissions without causing massive disruption and damage to everyday lives and livelihoods. And that, of course, is an enormous challenge.

"I think if you have one takeaway from this year's report, it's that energy systems are sticky and it takes time to transition them,"

said Paul Bodnar, global head of sustainable investing at BlackRock Inc., during a roundtable following presentation of the study. "The question is pace. People can disagree reasonably about how fast this will unfold in practice, obviously benchmarking against how fast it should unfold depending on what public policy goal you're focused on."

BlackRock, with \$9 trillion under management, has made net-zero commitments by corporations a key metric of its investment decision. Bodnar said he looks for evidence that companies are taking climate issues seriously and that they have a plan for thriving in a world that is moving to net-zero.

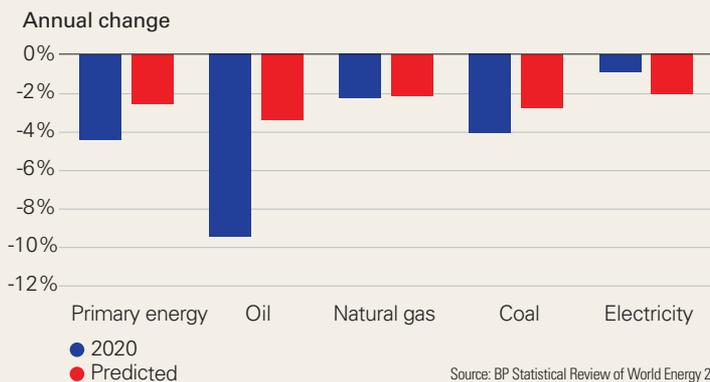
Global Energy Demand And Carbon Emissions



Growth In Oil Demand



Energy Demand Growth In 2020



Source: BP Statistical Review of World Energy 2021

“That is what will determine their long-term financial performance, which is what investors are focused on,” he said.

It also must be done while meeting growing demand from an energy-hungry world. One of the positives to come out of last year, Dale said, was the fastest-ever increase in share of renewables in the energy mix. Renewables have accounted for 60% of the growth in electricity generation over the past five years. Coal, however, has suffered, particularly in the U.S. and European markets.

“These trends are exactly what the world needs to see as it transitions to net zero: strong growth in renewable generation crowding out coal,” he said. Coal isn’t going anywhere, though; the level of coal-fired generation in 2020 was essentially the same as it was in 2015.

However, natural gas showed some staying power in 2020 despite a drop in consumption in most regions. China was the exception, with its gas demand rising by 7%.

“The relative immunity of natural gas was helped by sharp falls in gas prices, which allowed gas generation to gain share in the U.S. power market and hold its own in the EU,” Dale said.

The fall in prices, particularly in Europe, hampered growth in the U.S. LNG industry. Utilization rates at U.S. facilities fell to 30% to 35% by summer. Exports still increased by 30%, owing to three new trains coming online and other facilities ramping up. Had cargoes not been canceled, Dale said, U.S. exports would have shot up by 80%.

The road to net-zero, at least at this stage of the journey, is paved with ambition from governments and corporations. So far, the EU and 44 other countries have either passed or proposed legislation to achieve net-zero goals. Those countries account for about 70% of global carbon emissions, the International Energy Agency has said.

Dale sees it happening at the corporate level, too, noting that 3,000 companies have announced

they are pursuing net-zero goals.

“This rise in corporate ambition has coincided with growing societal expectations for companies to both increase further their transparency about climate-related risks and demonstrate their strategies and actions are consistent with Paris,” he said.

For all the announcements, there is a mismatch between ambitions and outcomes. Countries’ pledges are insufficient to meet Paris goals and a marked improvement has yet to show up in emissions data, Dale said.

Investors may not show patience for companies that make net-zero promises and fail to follow up, BlackRock’s Bodnar said.

“It is for companies that are currently dominant in the energy space to figure out where they can apply their comparative advantage in terms of talent, in terms of engineering, in terms of experience with how they currently manage energy systems, and bring that across to the energy economy of the future,” he said.

—Joseph Markman



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FOOLISH

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BRIGHT SPOT: MEET GIL BAUMGARTEN

Ex-broker turned fee-only fiduciary advisor Gil Baumgarten has written the book that shines a light on the faults of Wall Street brokerage firms and investors alike.

Gil is a 37-year veteran of the investment industry and ranks in the Top 50 Financial Advisors in Texas by Barron's. In 2010, Gil left the brokerage world to start Segment Wealth Management, a fully fiduciary firm where the interests of the client and the firm could align.

His new book, *FOOLISH: How Investors Get Worked Up and Worked Over by the System*, exposes Wall Street's hidden agenda, helping every investor to be on guard by giving them an inside look at the conflicted brokerage ecosystem. The book also highlights individual investor's self-harm tendencies and encourages them to take an introspective look at their own biases.

In a conversation with Investor, Baumgarten discusses how advocating for his client's financial well-being is the secret behind his billion-dollar success.

Why did you choose to leave the brokerage industry behind?

When you fully understand the brokerage business and the responsibilities of caring for other people's money, you find irreconcilable moral issues and chasms that cannot be bridged. Like my former boss told me, "You must choose sides." So, I did. I cast my lot with the clients.

"Advocacy" is a strong concept. What does that term mean to you?

Advocacy is doing for the client what they would do if they fully understood the decision before them and the ecosystem they are operating within. The fiduciary advice business is very different from the brokerage business. The brokerages operate on getting the client to say "yes" when a different question entirely should have been asked. Things get murkier when your broker tries to advise but has glaring conflicts of interest. The fiduciary business is generally void of conflicts, allowing a position of advocacy.

What is one topic you think investors should pay more attention to?

Costs are the most misunderstood part of the process because they are the most obfuscated. Additionally, investors do not normally know that many investment portfolio construction methodologies are doomed from the start because many



Gil Baumgarten

"Investors who are truly focused on the long term would be wise to follow the path Gil lays out."

—Mike Walen,
Former COO of
Cabot Oil and Gas

traditional methods have a near-zero probability of producing excess returns and a 100% probability of producing higher fees and taxes.

Why did you decide to share your story and insight?

I wrote my book out of frustration with the investment industry and how poorly it treats clients. And, over 37 years of working with investors, I've become familiar with investor mistakes. These mistakes are often born out of self-protection and greed, which strike at the most inopportune times for unwary investors. Investors engage in self-justification and self-deception to preserve their self-image. It's a vicious cycle with profoundly negative outcomes for investors. *FOOLISH* is an investor guide to success in navigating the financial ecosystem and their own biases. □



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Private producers driving activity surge in U.S. shale

Despite some large public independents and supermajors active in major U.S. shale plays taking more measured steps with focus on capital growth and dividends, privates are barreling ahead as oil prices rise. They're not just in the Permian Basin either, according to Rystad Energy.

Private producers accounted for nearly half of the nation's horizontal rig count in May, Artem Abramov, head of shale research for Rystad, said on a recent webinar.

"And they're still adding rigs," Abramov said. "We are tracking a pretty significant number of smaller private producers, which went completely inactive in 2020, and now more and more such companies are coming back with one, two, sometimes three rigs. This process will continue out in the second half of the year. So, it is actually quite likely that private operators will surpass their public peers in terms of the total number

of rigs they run before the end of this year."

Rystad believes the business model for public independents has changed forever, Abramov said, noting the shift from aggressive production expansion plans to discipline capital programs with reinvestment rates of 45% to 60%.

Analysts are now seeing higher percentages of privates with market share not only in the Permian Basin and the Haynesville, where they respectively make up about 50% and 70%, but also in Appalachia at around 45%. Of the private operators, Rystad data show Endeavor Energy Resources LP, Tap Rock Resources LLC and Nickel Road Operating LLC topped the list of companies with the most approved horizontal drilling permits from January to May, with a combined 351.

The activity is strengthening the U.S. shale sector. Global demand is picking up on vaccination programs that have given major economies confidence in reopening and travel is increasing. Oil prices have climbed above

\$72/bbl, and OPEC+ is gradually increasing production.

In all, U.S. shale players are increasing drilling though at a slower pace than seen during previous downturns.

"We have already got roughly 200 additional rigs in the U.S. land since the bottom had been reached in Q3 last year. Much of that recovery was observed in the Permian region," Abramov said.

The rig count in the Permian Basin has essentially doubled, he added. More rigs are also pumping in gas basins and the Eagle Ford, Denver-Julesburg Basin and SCOOP/STACK.

Rystad's Abramov shared other notables.

Fracking activity: As of June 16, the number of frac operations in North America has risen back to pre-COVID levels to more than 1,110, up from less than 400 a year ago. "June might become actually the best month this year," he said.

DUC inventory: The large inventory of DUCs accumulated in second-quarter 2020 has dropped to a level not seen in the last six



or seven years, Abramov added. The total DUC count is less than 5,000, down from more than 6,000 in May, Rystad data show. However, looking at the ratio of DUCs to active rigs, Abramov said the “inventory level still represents a structural anomaly.” In the Permian, for example, Rystad data in late May showed about 6.5 DUCs per rig compared to about 4 DUCs per rig pre-COVID.

Base decline: The base decline, or pace at which production falls, has improved compared to the beginning of the COVID-related downturn, he said, later noting it is starting to increase again. “In the beginning of 2020, U.S. tight oil production was declining by more than 600,000 barrels a day in the first month without new completions,” Abramov said. “That was an almost 200% increase from the base decline level in absolute terms, which we had in late 2016.” Today, it’s trending near 450,000 bbl/d in the first month.

Well performance: Abramov described well performance nowadays as “robust.”

“On a year-over-year basis, we are still talking about 5% to 7% improvement in well performance, driven by a combination of high-grading, shifts toward the most productive locations and a continuous increase in the average lateral length in most regions,” he said.

Maintenance activity: Improved base decline and better well performance mean fewer wells are needed to keep production flat. “Maintenance activity requirements went down from 900 wells per month in early 2020 to roughly 500 to 600 wells per month. ... But the maintenance activity will also increase as we move into the second half of the year,” Abramov said. “Still, we need to complete just 600 wells per month in H2 2021, and these can be delivered with 320 to 330 horizontal rigs in major tight oil regions.”

However, if producers want to increase production, the rig count level must rise.

“We see potential for small additions in the second half of the year, with production shifting

toward 11.5 to 11.6 million barrels a day by December 2021,” Abramov said. “As we move into 2022, we see potential for much stronger production recovery as long as oil prices remain at \$60 per barrel or higher.”

—Velda Addison

New M&A strategy for producers: Deals that make money

One surprising outcome of the recent large-scale consolidation in the oil patch seen in the past 12 months has been the tendency of deals to produce actual savings and increased value.

While mergers in the past may have focused on increasing shale runway, more recent combinations have ridden on goodwill from investors, an easing of pandemic restrictions and rising commodity prices.

The industry has largely shaken off the abysmal first half of 2020, when upstream deal value dropped by 97% to its lowest levels since

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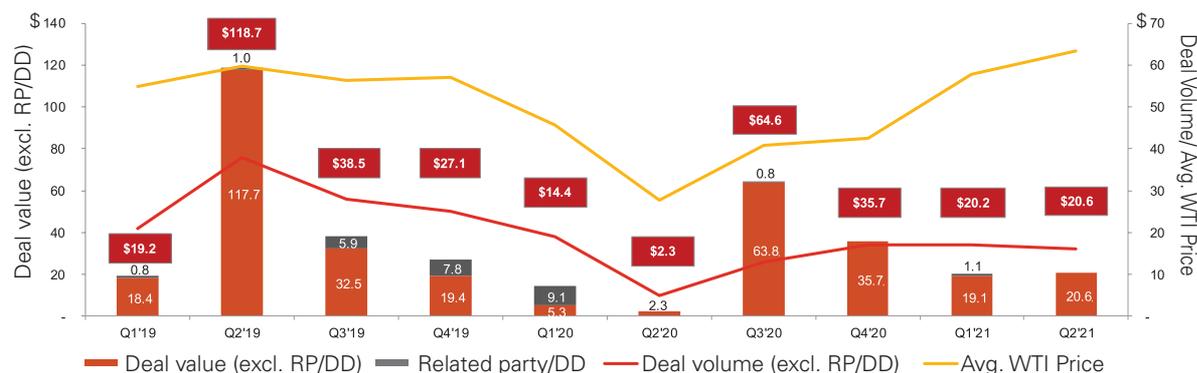
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Historical Deals Activity (Drop Downs And Related Party Bifurcated)

*Q2'21 data ends of May 15, 2021



Source: IHS Markit, Global Data and PwC analysis

the first half of 2011, according to PwC's midyear outlook. Amid the effects of the pandemic, deal values increased more than 70% to \$141 billion in the trailing 12 months, led by upstream deals that contributed \$38.6 billion in value.

Upstream deal value was largely driven by two megadeals: Chevron Corp.'s \$13 billion acquisition of Noble Energy in July 2020 and ConocoPhillips' deal to acquire Permian pure-play Concho Resources for \$13.3 billion.

Analysis by PwC identified cost reductions as the primary incentive for dealmaking up to the midpoint of 2021. In the past 12 months, many consolidation transactions have been pinned to lower G&A, lease operating expenses and capital synergies.

Consolidation in the upstream sector has allowed operators to acquire neighboring acreage, lower well costs and increase lateral well lengths. In the past 12 months, operational savings accounted for about 39.4% of deal synergies followed by G&A savings that accounted for 39.1% of savings.

Seenu Akunuri, the leader for PwC's U.S. energy and mining valuation practice, said the focus for companies in years past was to engage in deals that expanded inventory and replaced reserves. Transactions are now more comprehensive and consider other factors, such as shared midstream assets.

"And of course, as a way to strengthen the balance sheets, minimize debt and take advantage of the run-up in stock prices

to do transactions using shares," Akunuri added.

The focus for deals has shifted to not only to a longer-term perspective, but also as a way to create a stronger balance sheet that doesn't allow for a company to be caught off guard if prices weaken two or three years out.

"In all of the deals that we have seen, companies have actually become stronger in terms of managing their balance sheet, their leverage ratio tools and ensuring that they continue to focus on breakeven prices," Akunuri said.

For 2021, deals have also played out as energy indices have recovered in the past six months, primarily through commodity price increases and, so far for the year, are now outpacing the S&P 500.

Despite a healthier industry outlook, and the recovery of WTI crude prices, only a few oil and gas companies have recovered to pre-COVID market valuations.

As of June 22, year-over-year market cap is down for companies such as Royal Dutch Shell Plc (-34%), BP Plc (-29%), Eni (-21%), Repsol (-17%), Apache Corp. (-13%), and Exxon Mobil and Chevron Corp. (both -10%). Outliers include ConocoPhillips Co., which has seen a 14% gain, and Equinor, with a 2% gain.

After a consolidation-heavy year, which largely relied on the exchange of shares rather than cash, "by the time they closed, the purchase consideration actually significantly increased 30%, 40%, 50% ... [and] that resulted in much bigger returns for the holders of those shares of the

target company," Akunuri said.

"It has seen a great turnaround for the energy indices and much of the recovery from pre-COVID to post-COVID, year to date today, is primarily driven by what has happened over the past six months," he said.

But the industry remains seemingly dogged by its past. Among second-quarter 2021 deals, the multiple for upstream production increased to at least 25x, compared to second-quarter 2020, which valued production at about 10x.

"Both from a proved multiple versus a flowing multiple perspective, it's still tracking a little behind from 2019 multiples," Akunuri said. However, "there is a positive trend that is continuing this year, as we are seeing more and more deals being done."

—Darren Barbee

When peak oil demand arrives, OPEC's power will fade

A funny thing happened on Christof Rühl's way to research oil demand: He discovered a peculiar consistency in the relationship between global GDP and the volume of oil needed to support it, known as oil intensity.

"The regularity of this time trend is startling," Rühl and his co-author, Tit Erker, wrote in their working paper, "Oil Intensity: The curious relationship between oil and GDP."

Oil intensity relates to how much is consumed per unit of

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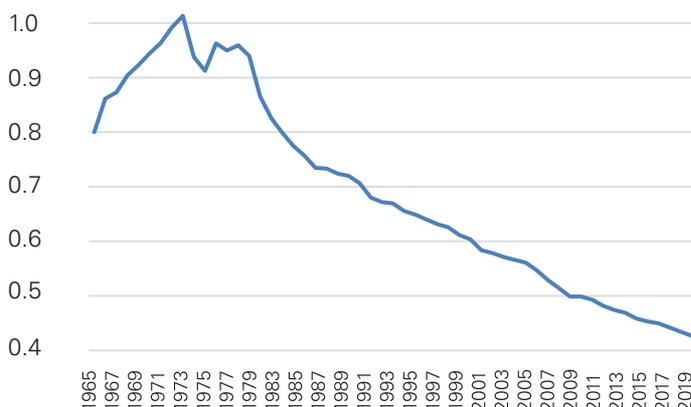
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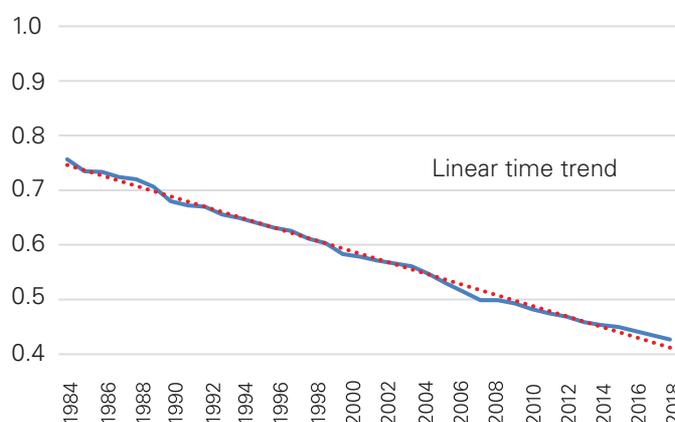


Global Oil Intensity And Time Trend Since 1984

Global oil intensity (bbl per \$1,000 of GDP in 2015 prices)



Global oil intensity and time trend (bbl per \$1,000 of GDP in 2015 prices)



Source: BP (2020); Report author calculations

economic output (income or GDP) and is measured in barrels per dollar. Rühl, a senior research scholar at Columbia University and senior fellow at Harvard Kennedy School, found that oil intensity peaked in 1973. At that time, it took more than a barrel to result in the production of \$1,000 worth of global GDP.

“Just pause there for a moment,” he said during a June 18 webinar hosted by the Center for Energy Research at Rice University’s Baker Institute for Public Policy. “It’s an incredible figure—makes it clear why oil was so important.”

Since then, the volume of oil needed to produce \$1,000 of GDP has fallen by more than half to 0.43 bbls or 18 gallons. This change reflects what the authors’ term a regime change from a supply-constrained to a demand-constrained oil market. The role of oil in the global economy, they wrote,

has changed in ways that are irreversible. For one, global peak oil demand is a serious prospect, one that speakers on the webinar projected could arrive between 2029 and 2033.

And the upshot of such a change? A demand peak would hamper the ability of low-cost producers to raise prices by cutting production.

“A shrinking global market is unlikely to leave space for the role OPEC has played over the entire period from the end of the old regime in the 1970s to the dawn of the present one,” they wrote. The stages of oil intensity over the past 40 years of the paper’s time frame can be divided like the ghosts in Dickens’ “A Christmas Carol.”

Past: Growing and volatile in the early 1980s, as global oil consumption growth outpaced GDP growth;

Present: Declining and regular

in this stage; oil demand continues to rise as oil intensity improvements trail GDP growth; and

Future: Assuming the decline in oil intensity continues to accelerate, “we will stretch into a world in which oil demand will fall because oil demand is no longer capable of doing the same as GDP, which is growing,” Rühl said during the webinar.

The study, however, focuses on oil intensity, and the authors acknowledge that it is just a single parameter in the change equation. The authors also address energy policy and the energy transition, noting that technological alternatives that allow for substitution, such as electric vehicles in the transport sector, are attempting to break oil’s monopoly.

Rühl does not believe policies that include subsidies and regulation will alone be able to succeed in decarbonizing the global transport. The study notes that a carbon price, a notion supported by the API, would be helpful but a challenge unto itself.

“Price sensitivity has diminished, and so any carbon price would have less impact on oil in transport than on other fuels in applications with more scope for substitution,” the authors wrote.

A decarbonization strategy would have to include options to substitute for oil. So, electric vehicles or hydrogen-powered vehicles could be implemented to diminish consumption of gasoline. That could create a “chicken and egg” problem, the authors said, if sufficient quantities of EVs are not yet available, or sufficient numbers of charging stations are not yet built, or if fuels such as hydrogen have yet to be scaled up.

“The less scope for fuel substitution there is, the higher the carbon price necessary to dent oil consumption,” they wrote, adding that “the scope for price volatility has become larger and the scope for volume volatility has become smaller over time.”

And despite all the hand-wringing on the part of the industry, the energy transition has had “no discernible effect” so far on global oil markets, the authors contend. The areas in which oil use has declined can be attributed to other factors, not the effect of any policy or set of regulations.

—Joseph Markman

Boosting U.S. shale output unlikely with OPEC+ inaction

The U.S. Energy Information Administration pointed last month to rising production in the coming months. In its Short-Term Energy Outlook, released July 7, the EIA said it expects OPEC and partner nonmember countries (OPEC+) will drive production growth.

“We expect rising production will reduce the persistent global oil inventory draws that have occurred for much of the past year and keep prices similar to current levels, averaging \$72/bbl during the second half of 2021 (2H21),” the EIA said. “However, in 2022, we expect that continuing growth in production from OPEC+ and accelerating growth in U.S. tight oil production, along with other supply growth, will outpace growth in global oil consumption and contribute to declining oil prices.”

Data from the International Energy Agency show global oil demand rising by 5.4 MMbbl/d this year and 3.1 MMbbl/d in 2022,

returning to pre-pandemic levels with 99.5 MMbbl/d.

With growth of 1.8 MMbbl/d, most of the increased demand is expected to come from non-OECD countries.

—Velda Addison

Last oil price boom is coming, warns BCG study

As economies begin reopening, the post-pandemic demand recovery will lead to one of the strongest-ever growth periods for oil demand. Although this supercycle will be unlike earlier oil price booms, according to a new report by Boston Consulting Group (BCG).

“Although BCG does not make price forecasts about oil or other products, we do anticipate that this cycle will cause a substantial rise in prices well in excess of the \$75/bbl Brent market level we are close to at present,” Rebecca Fitz, senior director of BCG’s Center for Energy Impact, told Hart Energy.

“These prices, well above long-run marginal costs, are unlikely to last past 18 months, given the elasticity of the system for both supply and demand is much higher,” Fitz continued. “As the boom wanes, prices will fall sharply, with long-run marginal costs also declining.”

Additionally, the supercycle should also pave the way for decarbonization and the energy transition, including a higher adoption rate of electric vehicles (EVs).

“The energy transition should accelerate since higher prices will incentivize end-users to move away from oil product purchases, increasing the pace of EV penetration into the fleet,” she said.

As a result, Fitz noted energy companies will have additional capital to deploy toward low-carbon projects. In particular, she believes technologically advanced companies will grasp the opportunities created by rising prices to repair their balance sheets, refine their strategies and increase investment in lower-carbon energy businesses.

However, the timing of the last



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oil boom still remains uncertain and will depend on several factors including lingering lockdown restrictions due to the appearance of new COVID-19 variants. Any increase in global oil supply from OPEC+, particularly Iran if the Biden administration were to remove economic sanctions, also adds to the uncertainty.

“Uncertainty around how these different forces play out makes it tough to predict when the boom will start or how high prices will go,” the report stated. “We will not speculate on potential future price levels. But in terms of timing, an oil price boom based on a fundamental supply-demand imbalance could start as early as the third quarter of 2021 or be delayed until 2022. And there are good reasons to believe that it will not last for decades. Indeed, in our view, it could be over in 12 to 18 months.”

So, how will the supercycle impact oil and gas businesses?

“If used correctly, a price upcycle will strengthen the financial standing of oil and gas companies,” Fitz explained.

Balance sheet strengthening, followed by increased shareholder distributions, are priorities for any excess free cash flow, which could augment the value creation potential of oil and gas companies in the short term.

“At the same time, for companies looking to reposition and decarbonize over a longer period, increased profitability should create more bandwidth to diversify capital allocation into new lower-carbon growth areas,” Fitz said.

“Even with higher prices, continuous improvement in capital efficiency will be critical to managing an energy transition,” she added.

—Faiza Rizvi

U.S. shale to deliver ‘super-profits’ on projected cash flow

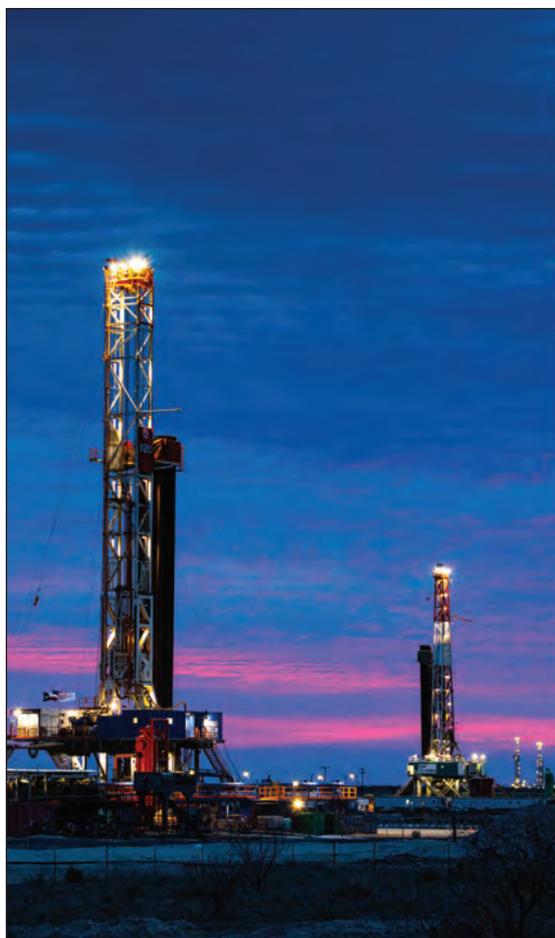
The U.S. shale industry has developed a bad reputation when it comes to generating returns, but, according to analysts, that is about to change.

A Rystad Energy report projects publicly traded E&P companies in the U.S. shale sector are set to generate record-breaking free cash flows in 2021. Historically, shale producers have struggled to produce positive returns, which led the sector becoming one of the S&P 500’s smallest after investors fled the space.

“In conjunction with the persisting low investment environment, E&Ps are enjoying super-profits,” Espen Erlingsen, head of upstream research at Rystad Energy, wrote in a June 23 report on U.S. shale producers.

Rystad estimates that all public tight oil companies will make close to \$60 billion in free cash flow in 2021, before hedging effects. A key reason for the all-time-high free cash flow is the “turnaround in the U.S. tight oil industry,” according to Rystad.

Even before the oil market crash of 2020, the U.S. shale sector began an overhaul of its cash-intensive business model for one of capital discipline. However, last year’s oil price collapse



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at the onset of the global COVID-19 pandemic fueled a complete reset of the industry with the shale patch emerging with tepid growth.

“Oil demand has gradually increased after the initial shock of the COVID-19 pandemic, and OPEC+ continues to hold back volumes from the market,” Erlingsen explained in the report. “The consequent high price movement has been further supported by a slow ramp-up in U.S. tight oil activity.”

Rystad Energy estimates that total gross revenue for all public upstream companies is expected to increase by almost \$500 billion in 2021, or 55% compared to last year—excluding hedging effects. At the same time, the investment level of these companies is only expected to grow by around 2% in 2021, resulting in significantly higher profits.

Typically, there has been a strong link between free cash flow and activity levels. Although U.S. shale’s mantra of capital discipline has all but bucked that trend.

New projects are making a comeback though, according to Rystad.

The firm reported the amount of greenfield investment that has been sanctioned as of June has already matched the full year 2020 total. It now expects the full 2021 level to be double that of last year.

Further, M&A activity in the oil patch has recovered in 2021, with transaction values increasing by around 30% compared to 2020, according to the Rystad report.

In conclusion, the Rystad report projected a \$348 billion surge in combined free cash flow by the world’s publicly traded E&P companies in 2021. The previous high was \$311 billion in 2008.

Both deepwater and offshore shelf are both set to recover this year with close to \$60 billion in free cash flow. However, tight oil is expected by Rystad to surpass both these offshore segments.

For 2021, the conventional onshore supply segment is in line to earn its highest level of free cash flow at close to \$160

billion—but this is still behind the record reached in 2011, according to the report.

—Emily Patsy

DUG Permian: Companies focus on reducing carbon footprint

If there was one message that resonated at Hart Energy’s Carbon Management Forum on July 12, it was that oil and gas companies in the Permian Basin are putting significant efforts in reducing the carbon footprint of their operations.

From flaring to carbon capture, executives during the event held in conjunction with the DUG Permian and Eagle Ford conference and exhibition highlighted their decarbonization efforts, discussing risks and opportunities of the path toward decarbonization.

“Energy transition and decarbonization isn’t a passing fad,” said Jason Offerman, co-founder and COO at carbon management platform Persefoni who kicked off the event. “Those who don’t take it

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seriously will struggle to get access to capital. There won't be any capital if there isn't any focus on climate impact."

Sustainability reporting will be critical for access to capital, Offerman continued stressing that carbon management is about managing risk and maintaining operations through the lens of decarbonization.

Jack Blears, director of E&P technology research at advisory firm Darcy Partners, opened the afternoon sessions by saying a lot of companies in the oil and gas space are looking at ESG expectations for methane emissions as an opportunity to differentiate themselves. It will take a different mindset among operators though.

"At the end of the day, it is an engineering problem, and it's up to the operators to solve the problem," Blears said. Still, decarbonization is a complex issue without a single right answer or solution.

"There isn't going to be a single winner among technologies," he said. "Multiple technologies will play a role."

He pointed to a number of tech-

nologies currently available to help operators from lower cost solutions such as OGI cameras and point sensors to higher-cost aerial and satellite monitoring.

Following Blears overview, service providers Baker Hughes Venture, Crusoe Energy, Kairos Aerospace and Liftrock Integrated Lift Services outlined many of the emission monitoring solutions available including some of today's most effective technologies for leak detection and emissions mitigation.

With flaring of great concern in the Permian Basin, four CEOs of technology companies participated in the "Land of the (Emissions) Free" roundtable to discuss solutions for cutting flaring activity and other emissions-generating operations in the oil patch.

"When you hear our license to operate is being challenged, we don't really have a choice but to deploy technology to address emissions," said Jason Roe, CEO and president of EcoVapor, on the roundtable which also included CP Energy Services CEO Tracy Scott Turner, Locus Bio-Energy

Solutions CEO Jonathan Rogers and Eyal Aronoff, CEO of Pioneer Energy.

Rogers chimed in that current technology for mitigating emissions may be embryonic, it has proven successful in many cases. Further, there are many technologies and solutions available to reduce emissions, according to Aronoff, who added to earlier comments during the conference by Blears.

"The industry is really still trying to figure out its accounting and reporting," Aronoff said, noting that solutions will develop as accounting develops.

Last year was a tipping point for the industry, he continued. "The supermajors came under a lot of pressure [on ESG and carbon management]." Aronoff indicated that the pressure has spurred progress within the industry in attacking its emissions issues.

Over time oil and gas operators will need to look at addressing emissions in a more holistic fashion, according to Roe. "It can't just be on initial production because if we only focus on the 80% we're missing part



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of the problem,” he said. “We can’t just concentrate on super emitters.”

Oil and gas, particularly natural gas, will be around for “a long, long time,” said Turner.

The day ended with a discussion on carbon recycling by Johanna Haggstrom, vice president, chemicals and hydrocarbon fuels technology at LanzaTech.

Haggstrom said 30% of the world’s carbon emissions come from six hard-to-decarbonize industries, such as steel and aviation. Additionally, technology can be used to turn carbon waste into usable gases for those industries.

—Faiza Rizvi and Len Vermillion

Harold Hamm calls new Midland WTI contract ‘overdue’

Launch of the new futures contract—Midland WTI American Gulf Coast—is the culmination of a year-long plan crafted by the Harold Hamm-backed American Gulf Coast Select Best Practices Task Force.

Oil producers, especially in the Permian Basin, will cheer the announcement of a new crude oil futures contract for physical delivery of WTI, which should start trading by year-end on the Intercontinental Exchange (ICE).

The launch of the new futures contract is the culmination of a year of work that began at this time last summer, when Argus Media and Platt’s agreed to start posting prices for a new crude designation, Gulf Coast Select. That was just phase one of the plan crafted by the task force.

“On April 20th last year, when the Cushing, Oklahoma, WTI contract traded down to negative \$38, it was a wake-up call to the oil industry that the storage constraints and landlocked location of the Cushing contract could no longer be ignored,” said Hamm, who currently serves as chairman of Continental Resources Inc.

“That was a turning point,” he continued. “Everybody said we’ve got to do something.”

Now, the new contract has been named the Midland WTI American

Gulf Coast contract (ICE: HOU). It is being launched on the trading platform operated by ICE, in coordination with Magellan Midstream Partners LP and Enterprise Products Partners LP. Both Magellan and Enterprise have extensive storage terminal and export facilities on the Texas Gulf Coast for oil export and to back up physical trading that stands behind “paper” trades.

“You have to be kind of hard-headed to get this stuff done,” Hamm told Hart Energy. “It’s the culmination of a lot of work. These things are not easy, but we kind of forget how powerful the industry can be when we work together.”

“It’s overdue, is what it is,” he added.

Hamm said the first phase was getting a price marker, which occurred in June 2020. “Argus and Platt’s agreed when they saw how much sense it made.” Phase two was to secure terminal volume capacity, whether at Corpus Christi, Houston or St. James, Louisiana. Houston made the cut.

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Now that the third phase is complete—securing a financial platform such as that of ICE where the new contract can be traded—all the parts have come together. (Originally Enterprise had a platform lined up with the CME’s Nymex, but it was canceled.)

Pending regulatory approvals such as from the Commodity Futures Trading Commission, trading of this contract will launch on ICE by the end of this year, Hamm said.

The new contract comes in response to market interest for a Houston-based index with greater scale, flow assurance and price transparency, the companies said. “It’s about more competition, more transparency and more liquidity,” Hamm said.

This is a happy marriage of four positives: surging oil production in the Permian Basin and elsewhere in the U.S., the capabilities and global reach of ICE’s state-of-the-art electronic trading platform, and the necessary infrastructure for pipelines and storage operated by Magellan and Enterprise.

—Leslie Haines

Energy sector in limbo over permitting, ESG, climate policies

President Joe Biden’s ambition to entirely wean the U.S. from fossil fuels by 2035 is “unattainable, not doable,” Sen. Joe Manchin (D-W. Va.) told a Babst Calland law firm panel during a recent webinar. The recording is included in the firm’s annual energy industry report, released June 30.

“There’s no way that we can eliminate our way to a cleaner climate,” the chairman of the Senate Committee on Energy and Natural Resources said, noting that the country could not make a sufficient worldwide difference because other countries will not follow its lead in cutting oil, gas and coal from the global energy mix. “Not going to happen.”

In its report, Pittsburgh-based Babst Calland focused on how the oil and gas industry, recovering from the economic impacts of the COVID-19 pandemic, is at an inflection point as it awaits the full impact of President Joe Biden’s

climate-centric policies and the emergence of ESG concerns in investing decisions.

Manchin told the attorneys he was concerned about the federal permit approval process, and how the sluggish system could hinder the oil and gas industry’s—and the country’s—ability to build the infrastructure necessary to put the energy transition into effect. The senator has supported legislation to speed the permitting process.

“I don’t know any other way to get it done,” Manchin said. “We might not live long enough to see half of it being built if we don’t do something.”

The report addressed regulatory delays, as well, noting how they continue to threaten major pipeline projects in the Appalachian region.

“Producers in Appalachia are still in need of more transportation capacity to the Gulf and along the eastern seaboard, yet a plethora of public agencies and other stakeholders along the proposed pipeline routes continue to register objections,” the report said. “Fortunately, significant infrastructure is already



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in place, but efforts to add to that capacity will likely become a bigger and more costly challenge under the current permitting regime.”

Babst Calland pointed to burgeoning ESG reporting as among the most notable developments of the past year in the energy sector.

“Company reports and commitments to best practices have taken many different forms, but most are in response to pressure from financial investors and other stakeholders,” the report said. “Responsibly sourced gas certification programs are gaining traction. Engagement by the entire supply chain is helping to achieve the needed focus on ESG issues, some of which have been embraced by the industry for many years and are now getting the broader attention they deserve.”

Not only investors, but the federal government is focusing more on ESG issues. The report noted that a year ago, the Securities and Exchange Commission (SEC) did not impose more specific disclosure requirements for climate change risk because the standard in place was sufficient for investors

to make informed decisions.

However, earlier this year, acting SEC chair Allison Herren Lee said the agency would examine the effectiveness of climate-related disclosures in public company filings. Babst Calland also noted that SEC staff are evaluating climate change disclosure rules with the intent of “facilitating the disclosure of consistent, comparable and reliable information on climate change.”

The report did not forecast the direction the agency will take under new chairman Gary Gensler, but warned “the days could be numbered for the old materiality standard, and public companies may soon be required to perform a deeper analysis of their own climate change impacts as well as the risk climate change poses to their business.”

The Babst Calland team did not attempt to soft-pedal the meaning of Biden’s government-wide approach.

“President Biden’s series of executive orders and the anticipated agency actions across the executive branch have the potential

to change the nature of the administrative state in a manner not seen in decades,” they wrote. The report also touched on state and local initiatives to support electric vehicle usage, and to ban natural gas hookups in new construction, as proposed in San Francisco, New York and Berkeley, Calif.

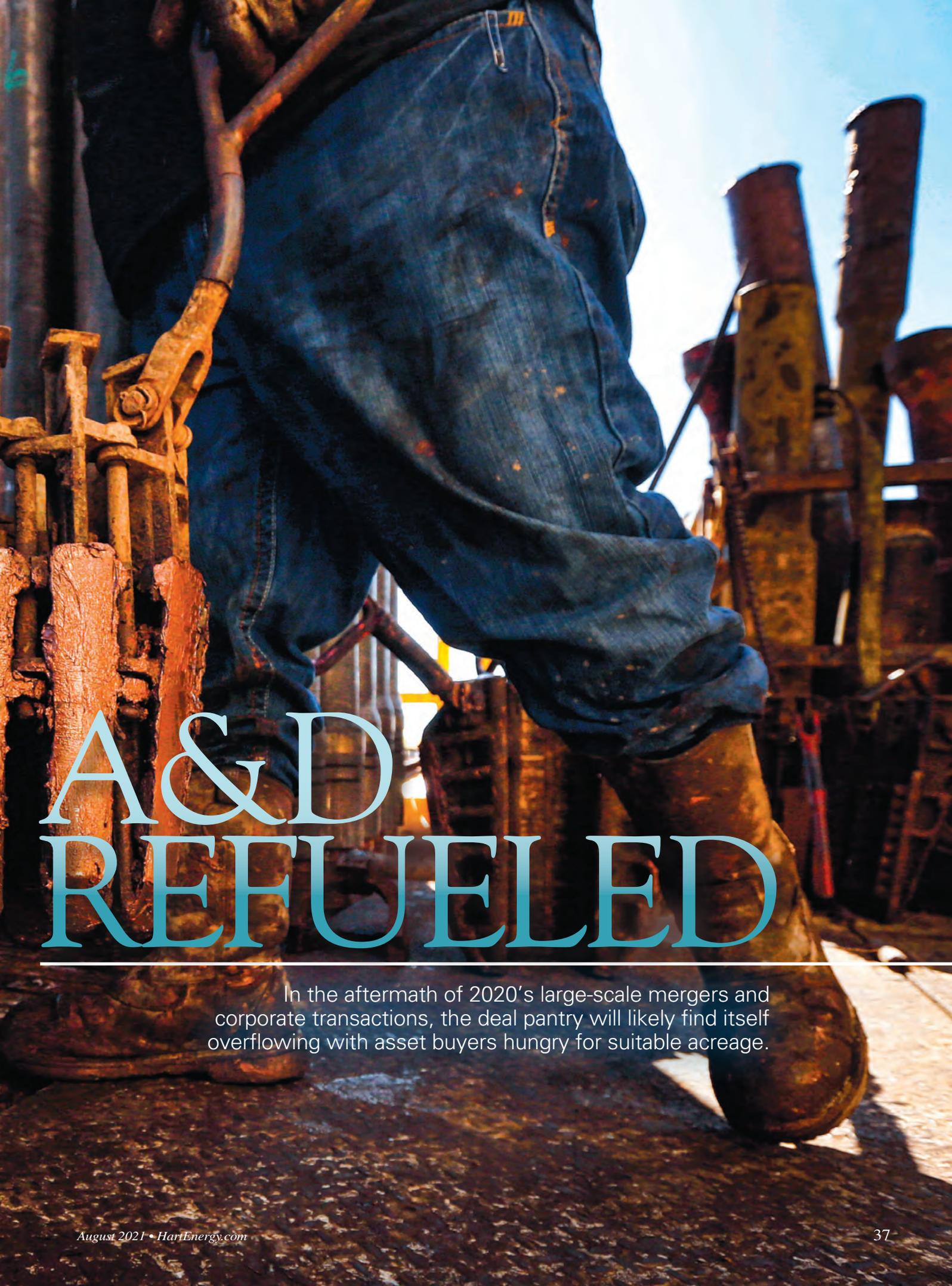
Climate change-related litigation in federal and state courts is on the rise, the attorneys said, and the suits are coming from all directions.

“Cases include those initiated by states, cities and municipalities against energy companies under tort, fraud and misrepresentation theories seeking damages associated with the cost of improving infrastructure to mitigate alleged effects of climate change,” the report said. “Claims by public interest groups and individuals against the federal and state governments alleging violations of constitutional rights, third-party challenges to permits and approvals; and shareholder/investor claims against public companies alleging misrepresentation of the value of assets in financial filings.”

—Joseph Markman







A&D REFUELED

In the aftermath of 2020's large-scale mergers and corporate transactions, the deal pantry will likely find itself overflowing with asset buyers hungry for suitable acreage.

ARTICLE BY
DARREN BARBEE

PHOTOGRAPHY BY
TOM FOX



"In order to attract and retain investors, the industry has needed consolidation," said Southwestern Energy Co. CEO Bill Way.

It seemed, in early 2020, as if the vast ocean of M&A deals had crashed down for a final time, and the waves had stilled. Was this how the world of oil and gas cashed out?

By fall, the industry's shut-in wellbores—overfilled at times with panic and a worthless commodity—slowly came to life. News of a COVID-19 vaccine restored some faith, and gradually rising commodity prices restored a little more.

With prices in the \$5/bbl range, the Permian Basin and other favored plays began to create giants as consolidation deals ruled in 2020 and so far this year are still playing a major role in transaction value. More is likely to come.

With nearly \$3 billion worth of transactions in the past 12 months, Southwestern Energy Co. CEO Bill Way said consolidation within the energy industry continues to be necessary as companies work to pursue a disciplined and comprehensive strategy.

"In order to attract and retain investors, the industry has needed consolidation," Way said. "While the commodity price outlook has improved, there is still demand for companies with greater scale and resilience, so I expect consolidation to continue."

A scarcity of cash made all-equity deals the fashion of the pandemic season. In the second half of 2020, about \$49 billion in oil and gas deals were struck, with 90%—\$44.4 billion—carved out from corporate deals, according to Enverus data.

Now, asset deals are emerging and will continue to emerge in the next 18 months, investment advisers and E&P managers said.

Thanks to the M&A of last year, the 2021 to 2022 A&D engine is freshly refueled. Where Chevron Corp. bought Noble Energy Inc. and Devon Energy Corp. bought WPX Energy Inc.—anywhere there were large-scale mergers—castoffs will emerge.

Public companies are already starting to eschew mergers with other public companies and

instead have purchased large private companies, including Pioneer Natural Resources Co.'s \$6.4 billion deal for DoublePoint Energy LLC, EQT Corp.'s purchase of Alta Resources LLC for \$2.9 billion and Southwestern's deal to buy Indigo Natural Resources LLC for \$2.7 billion.

Typically, in the aftermath of a merger not all assets fit in the new company. Analysts and dealmakers think that those castoffs will create an aftermarket of second-hand acreage for independents and private equity companies.

For now, those asset deals are discussions. Eventually, they will start to transact, said Craig Lande, head managing director at RBC Richardson Barr.

"The biggest thing is the capital markets have opened up, and the high-yield [bond market's] are on fire," Lande said. "People with debt can really help their leverage problems."

"The asset market always flourishes when the capital markets are open. And right now you're seeing several deals where publics are now buyers of assets," Lande said.

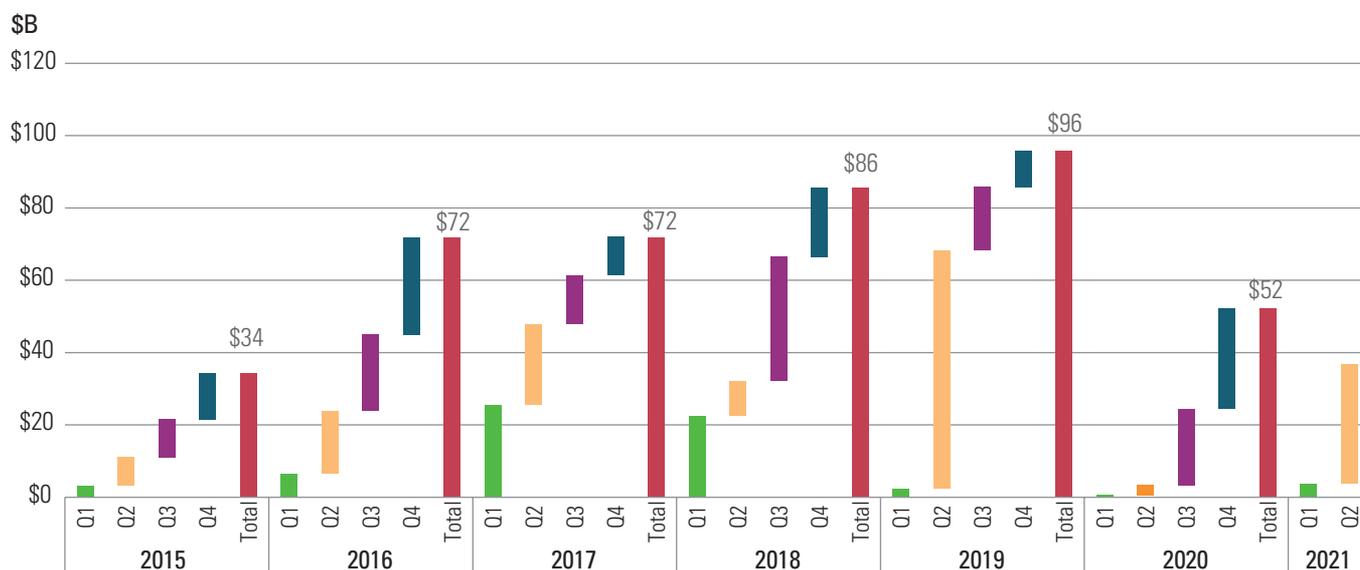
However, after a lull in the first quarter of 2021, those asset deals are still on the shelf of being shopped, possibly as oil prices have skyrocketed to more than \$70/bbl and caused some sellers to second guess when they will see maximum valuation.

But purchases of an accretive asset can also be a catalyst to issuing equity and high-yield financing, Lande said. "That's been incredibly constructive and very de-levering for the folks that have done that," he said.

Companies such as Northern Oil and Gas Inc. have followed well-received deals, such as the company's Permian Basin acquisition, with secondary offerings. In June, Northern Oil and Gas offered 5 million shares worth up to \$87.5 million. In April, Enerplus Corp. announced it had increased its unsecured bank credit facility to \$900 million from \$600 million after agreeing to acquire Hess Corp.'s Williston Basin assets for \$312 million.

U.S. Deal Value Since 2015

\$33 billion is the highest quarterly total since 2019, which included OXY/APC.



Source: Enverus





“The asset market always flourishes when the capital markets are open. And right now you’re seeing several deals where publics are now buyers of assets,” said Craig Lande, head managing director, RBC Richardson Barr.

“Several public companies have done that, and the market has rewarded almost everyone for their acquisitions, basically, in 2021,” he said.

Asset deals are also likely to be favored because they’re generally easier and simpler to put together than the complication of a merger.

“All these asset deals, generally have a big slug of PDP and cash flow and all the things that make the deal accretive and ... the publics are trying to fill an inventory.”

After a negligible showing in the first quarter of 2021, corporate mergers again soared in the second frame with \$28.7 billion in deals—nearly 87% of all second-quarter transactional value.

Second-quarter corporate deals showed considerable life with deals, including Southwestern’s June 2 deal to enter the Haynesville Shale through the acquisition of Indigo Natural Resources.

Southwestern’s Way said the Indigo deal was an extension of the company’s efforts last year to expand in the Marcellus and Utica plays with the acquisition of Montage Natural Resources. The \$213 million all-stock deal added about 325,000 net acres to Southwestern’s portfolio, with its total net acreage position at roughly 787,000.

“Both the Montage and Indigo transactions met the objectives in this framework,” Way said. “They were accretive to key financial metrics, accelerated the delivery of our goals, strengthened our balance sheet, provided tangible synergy opportunities and leveraged our core competency in large-scale natural gas development,” he said. “The Indigo acquisition expands our operations into Haynesville and the growing Gulf Coast demand centers.”

After closing, Southwestern will have core acreage positions in the two largest natural gas basins in the U.S.

Offering hints

Southwestern had hinted at its interest in expanding into the Gulf Coast region. Following the acquisition of Montage, the company studied natural gas-focused plays, which included Appalachia and the Haynesville.

During that process, Southwestern started a dialogue with Indigo on what a combination of the two enterprises might look like. Indigo’s high-margin production, the strength of its balance sheet and quality of its acreage position were natural fits.

The Indigo deal increases Southwestern’s free cash flow output to about \$1.2 billion by 2023, the company said. It also expands 2022 estimated margins by 12% as Southwestern realizes low-cost access to premium markets in the growing Gulf Coast LNG corridor.

After the dust settles, Way said the company will evaluate the portfolio to see what belongs with the company long term.

Asset acquisitions are generally “solved for a lot of things,” Lande said. They keep valuations strong. The A&D market is typically healthier when publics are the buyers.

And private equity continues to play a role in A&D transactions.

“Most people thought [private equity] was left for dead, or had shifted to renewables and alternatives,” Lande said. “There’s certainly less private equity, but private equity is still very, very strong. It still has a lot of dry powder. And you’re seeing that some of these big, big deals have been bought by private equity.”

Any doubts of private equity’s remaining buying power have quieted. In February, EnCap Investments LP, through its portfolio company, Grayson Mill Energy, agreed to buy Equinor ASA’s Bakken E&P and midstream assets for \$900 million.



In May, Sabalo Energy LLC, another EnCap-sponsored company, purchased Laredo Petroleum Inc.'s Howard County, Texas, acreage for \$715 million in cash and stock. In March, Pontem-backed Validus Energy agreed to purchase Ovintiv's Eagle Ford Shale assets for \$880 million.

"Those are significant size, \$500 million, \$1 billion deals, and private equity is telling you, 'We are not dead,'" said Lande.

Generally, private equity firms are buying behind the scenes through larger public companies that Lande described as "neglected assets."

"The bigger guys just can't do everything," Lande said, "particularly on assets they're not focused on. That's what private equity does. They take neglected assets, they spend capital, they make them better."

And private equity firms' shift to distributing cash flow to their limited partnerships has driven acquisitions an order of magnitude larger.

"They want significant PDP and cash flow with basically de-risked assets from the get go," he said.

Horror show

From the perspective of A&D advisers, 2020 started out like a horror show and steadily improved to lackluster.

In 2020, EnergyNet, which markets assets as well as government lease sales, saw about \$500 million in assets transacted—a significant dip from 2019 and 2018.

CEO Chris Atherton said the company's transactions were down 30% by volume, with about 1,660 deals in 2020. Values were down about 50%. A typical \$10 million package the year before was reduced to \$5 million because of depressed commodity prices.

The company eked out its existence, in

part, by marketing deals for larger companies. That included sales assets sold by XTO Energy Inc. in the Eagle Ford, Austin Chalk and Uinta Basin last year, as well as Chevron Corp.'s assets in Texas, Carter Knox Field in Oklahoma, Jo-Mill/Spraberry fields, as well as other large independent producers.

"We were fortunate to get some of those deals on the market and closed, and they had a lot of robust buyer interest and participation," he said.

Chevron also bought buyers—at least 30—for a package worth \$25 million.

Long story short, "2020 was bad. Everybody just kind of froze up and didn't want to do anything."

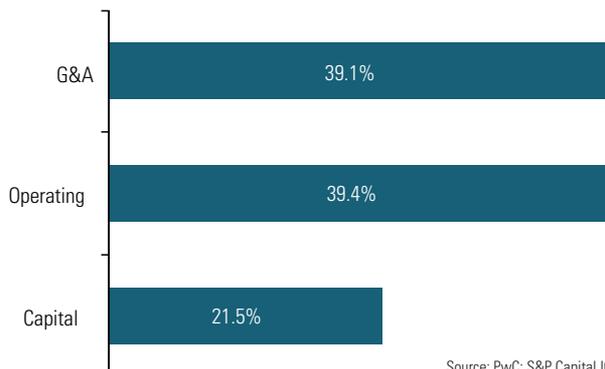
Deals that did close were straightforward, based on PDP, and lacked much nuance or value when accounting for potential upside value.

"It was all the uncertainty. What's going to happen here? Is the industry going to be here? Is the company going to survive?" he said. "In hindsight it looks like it was kind of at the bottom of a very long downcycle."



"I think the surviving entities are still somewhat getting their arms around what their portfolio looks like and what is core and what is noncore," said EnergyNet CEO Chris Atherton.

Synergies From Deals PwC Reviewed



Source: PwC; S&P Capital IQ



What did sell in 2020 was conventional assets. Atherton said they outpaced shale assets four to one. There were a slew of reasons for the pullback, he said. The shale asset market overheated, wasn't perceived as resource-rich as originally thought because of parent-child well issues, and conventional assets are generally more predictable.

"And that was partly due to the ... prices. It wasn't economic to buy acreage to drill a \$10 million well," he said. "So, there was kind of a pivot back to more conventional or at least mature shale assets."

Sentiment finally began to change around November and December as uncertainty around the presidential election eased and the announcement of a COVID-19 vaccine brought more stability. The sense, generally, was that "we've been through hell, and now we can see the light at the end of the tunnel," Atherton said.

First-quarter 2021 deal activity was robust as life began to shift back to some version of normalcy. April, May and June also mirrored deal volumes EnergyNet saw in 2019.

Now EnergyNet and other buyers and sellers can look to the next year and a half of deals that seem rife with opportunity. Consolidation by large companies is likely to start an asset-sale landslide as the megamergers of 2020, such as Pioneer Natural Resources Co. and Parsley Energy, Chevron Corp. and Noble Energy, Devon Energy and WPX Energy and others begin to sort out what they will retain or jettison.

"I think the surviving entities are still somewhat getting their arms around what their portfolio looks like and what is core and what is noncore," he said. "Because of the rapid increase in commodity prices ... people seem to be bullish."

Atherton speculates that had prices remained lower, say in the \$50 range, the push to sell off noncore assets might have gone faster.

Now, "there's no penalty to hang onto [an asset] for six more months," he said. However, the megamergers will probably result in significant asset sales within the next two years.

"We are starting to see some of that interest," he said.

EnergyNet plans to continue its place as a "vendor of choice for Chevron for the best non-core assets," adding the company was at work in June closing a merger for the company in New Mexico.

"I think we'll see that from other large sellers that did large acquisitions, as well," he said.

Spread fears

Darrin Henke, Penn Virginia Corp.'s president and CEO, bounded down the stairs at the Hart Energy's DUG Permian Basin and Eagle Ford Conference and Exhibition in Fort Worth in July, exalting about his company's deal to buy fellow Eagle Ford operator Lonestar Resources US Inc.

In an interview, Henke didn't want to speculate on why Lonestar was willing to sell, though COVID-19 fatigue from 2020 is surely one cause. Another: Lonestar's finances. Lonestar's market cap of roughly \$75 million is swamped by its \$260 million debt.

Based on July 9 pricing, Penn Virginia Corp. will pay \$370 million for the company, including 5.9 million shares of stock and the assumption of about \$236 million in debt.

The spring in Henke's step was clear: Penn Virginia sees an opportunity to add acreage and longer laterals at a price of \$30,000/boe, all while increasing projected 2021 free cash flow per share by 30%.

Henke also said Lonestar's contiguous acreage position will afford operational and G&A synergies worth at least \$20 million while adding 13,000 boe/d for a combined 38,000 boe/d in combined sales.

Henke acknowledged the deal would likely have been far different had Penn Virginia paid cash instead of using stock. But through an eq-

uity transaction, Penn Virginia increases its position by more than 50% from 90,000 net acres to 143,000 net acres.

"It's tremendous accretion on basically every front. Net asset value, free cash flow. And we're doing that at a discount to PV10," he said. "So we're paying roughly about \$370 million for this acquisition."

Even as prices rebound, buyers continue to find attractive pricing. Whether the seller's market shrinks as commodity prices—crude oil was in the \$70s in mid-July—remains a key question.

Seenu Akunuri, the leader for PwC's U.S. energy and mining valuation practice, said the focus for companies in years past was to engage in deals that expanded inventory and replaced reserves.

WARM AND FROSTY

There's something about January—especially when they aren't cold—that puts a chill in the oil and gas A&D market.

By spring, however, M&A in the U.S. had regained its footing with a sizzling \$33 billion second quarter from more than 40 deals—seven worth at least \$1 billion, according to Enverus.

Andrew Dittmar, senior M&A analyst at Enverus, said that investor pressure to operate leaner made consolidation a priority.

"With three extremely active quarters out of the last four, there has been more than \$85 billion announced in upstream M&A during the prior 12 months," he said.

But the targets for mergers and acquisitions shifted in second-quarter 2021. During 2020, consolidation between public companies focused on operational and G&A synergies.

In 2021, only two public company combinations were tallied at more than \$1 billion: Bonanza Creek Energy Inc.'s \$1.4 billion purchase of Extraction Oil & Gas Inc. in Colorado's Denver-Julesburg Basin and Cabot Oil & Gas Corp.'s merger with Cimarex Energy Co. in a deal that valued Permian Basin and Midcontinent producer Cimarex at \$9.3 billion. Only the Bonanza Creek merger offers operational synergies.



Andrew Dittmar, senior M&A analyst at Enverus, said that investor pressure to operate leaner made consolidation a priority.

Public companies instead turned to the private market:

- Pioneer Natural Resources Co. agreed to a \$6.4 billion deal for Midland Basin pure-play DoublePoint Energy;
- Southwestern Energy Co. will buy Indigo Natural Resources LLC for \$2.7 billion; and
- EQT Corp. purchased the Marcellus' Alta Resources LLC for \$2.9 billion.

"The uptick in acquisition activity targeting private equity-backed E&Ps is likely a welcome relief for sponsors that were challenged to find exit opportunities over the last few years," Dittmar said. "The deals targeting private E&Ps are less about cost-cutting synergies and more about adding inventory. That can be in a buyer's home basin, like Pioneer/DoublePoint, or entering a new area as Southwestern did

by acquiring Indigo in the Haynesville Shale."

Private equity sponsors are receiving mostly buyer's equity in these sales, with stock constituting about 70% of the value paid with the balance made up of cash and debt assumed. In past years, private sellers typically only wanted cash.

"Following a rally in equities that raised the valuation for public E&Ps, their stock represents an attractive currency to buy private and PE-backed counterparts," Dittmar said.

Second-Quarter 2021 Deals By Value

Date	Buyer	Seller	U.S. Play	Value (\$B)
05/24/21	Cabot Oil & Gas Corp.	Cimarex Energy Co.	Delaware/ Midcon	\$9.25
04/01/21	Pioneer Natural Resources Co.	DoublePoint Energy LLC	Midland	\$6.45
06/08/21	Contango Oil & Gas Inc.	Independence Energy LLC	Multiple	\$4.48
06/02/21	Southwestern Energy Co.	Indigo Natural Resources LLC	Haynesville	\$2.98
05/06/21	EQT Corp.	Alta Resources LLC	Marcellus	\$2.9

Source: Enverus



Penn Virginia sees an opportunity in the Lonestar Resources deal to add acreage and longer laterals at a price of \$30,000/boe, all while increasing projected 2021 free cash flow per share by 30%, said Darrin Henke, Penn Virginia Corp. president and CEO.

On its face, a \$70 barrel oil price is a clear bonus for the oil and gas industry that for the past five or more years has worked to shape its operations into survivability at \$50 oil prices.

“That means a lot of excess cash that allows companies to strengthen their balance sheets and focus on core versus noncore,” said Seenu Akunuri, the leader for PwC’s U.S. energy and mining valuation practice. “There’s still a lot of companies out there that have highly levered balance sheets.”

Akunuri expects to see consolidation that will focus on taking advantage of companies that may have over leveraged balance sheets.

However, bid-ask spreads will become a factor as CEOs start to see \$75 oil and projection that oil will go even higher.

“They’re going to say my portfolio right now is worth a billion dollars, but at a hundred dollars it’s at what? \$2 billion. So I’m not going to sell it at a billion,” Akunuri said.

The drawback to the crystal ball methodology of dealmaking is that it doesn’t work, particularly if OPEC changes its quotas or some other unlikely event (a pandemic, for example) fouls up the world’s supply and demand.

“As we have seen, that crystal ball has befuddled all of us, right? There will always be situations where some companies will say, no, we will not do this deal because we believe the prices are going to go up.”

C-suite executives still see the need for few companies, which will lead to more M&A, Lande said. But the urgency for deals, spurred by higher commodity prices and high leverage, has been tempered. But larger consolidation moves and asset deals will undergo a more thoughtful process.

“You just don’t have the fire underneath you to have to do something right now,” Lande said.

Atherton agreed that the deal dynamics will change because of uncertainty or volatility. While prices may not be volatile, the rolling boil of oil values can change expectations.

“Just because buyers’ and sellers’ expectations are trying to align, it can cause a little bit of a pause or delay in deals going on in the market,” he said, adding that sellers can be more patient.

For public companies focused on capital discipline and free cash flow generation, their sights are likely set on longer-term strategy. “So the divestments from the larger public will probably continue,” he said.

The deals that have transacted in the past six to nine months have largely benefited both sides of mergers and acquisitions. Those companies have further lowered breakeven costs while commodity prices and companies were valued poorly.

The ability to share in the potential rise in stock prices has been beneficial to anyone who held onto certain stocks, Akunuri said.

Deals, for instance, that were announced in January and closed in the spring have reaped significant returns.

“If an investor held onto their share, those prices are 30%, 40% more because stock prices

went up,” he said. “So that’s kind of how the view needs to be as opposed to a billion-dollar company that is at a much higher risk of if the commodity prices do not go to \$100 but actually go back to \$40.”

The ESG in A&D

The rumors running wild in the Permian Basin in July were that Royal Dutch Shell Plc was considering a sale of its Permian assets. The reason: ESG.

Shell was ordered by a Dutch court to speed up its plans to cut greenhouse-gas emissions faster than it originally intended, Reuters reported.

Shell’s Permian Basin position could be worth more than \$10 billion. The acreage includes 240,000 net acres in the Delaware Basin and 2020 net production of 197,000 boe/d, according to Enverus.

But ESG hasn’t become just an impetus for dealmaking, but part of the fabric of transactions as more and more E&Ps examine their emissions and how their investors view them.

Historically, ESG was, if not an afterthought, just part of a checklist item during the signing portion of a deal. Now, ESG due diligence is being brought to the front and center of the sales process, PwC said.

The interest buyers take in ESG is not confined to carbon emissions but also carbon capture, “as well as thinking about the long run. Should you have a portfolio that includes some amount of renewables?” Akunuri said.

A focus on ESG in the deal room is partly driven by oil and gas companies that want to be part of the portfolios of general energy investors that make ESG a priority.

A commitment to making ESG part of deals will continue to be important “if you’re focused toward all types of investors, not just only those core investors” in oil and gas, he said.

ESG has become a focal point for public companies and private equity firms. RBC has an ESG group that it works with to analyze a transaction’s potential environmental impact.

“Look, ESG is here to stay,” Lande said, adding, “I will say when oil is \$70, I hear a lot less about ESG than when oil is \$30. But the reality is it’s here to stay.”

Lande said there’s been a shift in thinking about ESG in general. “Whether it’s a private equity company trying to get LPs to join or, if you’re a public company, just showing that you’re good stewards to the environment, that’s not going away,” he said.

Lande said at the end of the day, ESG is now part of the data rooms. “It used to be in the back of the book. Now it’s in the front of the book,” he said.

Atherton said ESG is central to the E&P executive teams that are considering asset deals. Still, he said the value proposition of some assets, along with good stewardship, is still the ultimate proposition on the table.

“What’s somewhat interesting to me is some of the pivots by companies that are divesting of fossil fuels are shifting away,” he said. “They’re going to sell those assets to someone else. It doesn’t really fix the problem.” □



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Chart 1

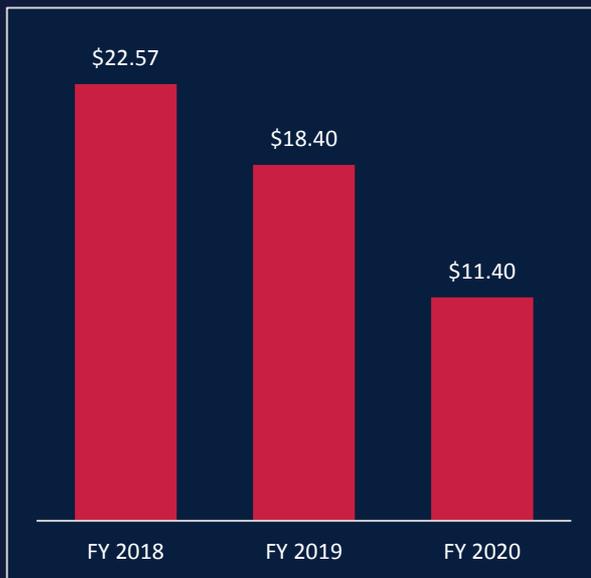


Chart 2: EBITDA Improvement in 90 Days



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Chart 1 shows average cost to produce a barrel of oil equivalent across Maverick's assets. Chart 2 shows monthly increase over baseline in operating cash flow of acquired assets under Maverick's management, from Nov. 24, 2020 acquisition through Q1 2021, \$56.2 million run-rate adjusted EBITDA improvement.

A PURE PLAYER IN THE HAYNESVILLE

Six years after a billion-dollar purchase and quietly building production to nearly 1 Bcf/d, Vine Energy Inc. overcomes the odds and breaks through the IPO barrier. Now it must sell its story on why a new Haynesville Shale natural gas producer can exceed investor expectations.

INTERVIEW BY
STEVE TOON

It's been a longer-than-anticipated wait, but Dallas-based natural gas producer Vine Energy Inc. finally found its home in the league of public players. This spring, the Haynesville Shale-focused operator relaunched its IPO after having first tested the waters in 2017, becoming only the second pure-play producer in the basin. Notably, Vine is the first E&P to IPO since Jagged Peak Energy in 2017.

Despite the oil and gas sector being in the penalty box the previous four years due to a run of poor sector returns over the past decade and energy transition headwinds, Vine was able to raise some \$350 million with a little help from sponsor The Blackstone Group and management, which backstopped the offering and continues to control 73% of shares. It enters the public arena with a \$1.2 billion market cap.

Vine's story began rather dramatically in 2014 when the startup, funded by Blackstone, acquired Royal Dutch Shell Plc's 102,000-net-acre position in the Haynesville Shale for \$1.2 billion. The venture was and continues to be led by Eric Marsh, a former executive at Encana Corp. (now Ovintiv), which held a 50% working interest in the same acreage with Shell at the time.

The IPO rolled up three affiliated entities: Vine Oil & Gas, Brix Oil & Gas Holdings and Harvest Royalties. The combined portfolio includes 125,000 net acres primarily in Red River, DeSoto and Sabine parishes in Northwest Louisiana prospective for both the Haynesville and Mid-Bossier shales. Proved reserves are 3.2 Tcf with some 900 drilling locations remaining, or 25 years of inventory at a four-rig pace.

Immediately following the IPO, Vine completely refinanced the company via a new reserve-based loan with a borrowing base of \$350 million and a \$950 million bond offering. Oil and Gas Investor visited with Marsh in June.



When Eric Marsh launched Vine Oil & Gas seven years ago, he had his pick to target any U.S. natural gas basin. "Clearly, the Haynesville," he said. "I have always felt that the Haynesville was under appreciated."

Investor As the first E&P IPO in four years, what do you think the market now wants from a natural gas producer?

Marsh Between the IPO roadshow and the bond run shortly after, we held over 150 investor meetings where we had the opportunity to hear from the investment community and what they want, and they were loud and clear. They want a low-growth profile company that manages their balance sheet well.

They want lower debt, certainly sub 2.0x net debt to EBITDA and preferably heading toward 1.5x. They think 2.0x is a beginning point. Most will tell you that something with one handle on it is pretty much going to be required of us. You can't get a new RBL unless you're sub-2.0x today.

They don't want production growth; they want you to be flat, and they want free cash flow growth. What they want for us to do is to drill cheaper, to operate cheaper and to reduce our G&A and make more margin on every Mcf a day we produce.

They want the company to generate a meaningful amount of free cash flow and preferably have a good cash flow yield. They are looking for the natural gas companies in the future to look like perhaps a ramped-up utility that provides returns to their shareholders on a quarterly basis. To attract the generalist investor back into the industry, these are the kinds of things that we as an industry have to do. That's a story that we all, as an industry, need to begin to embrace and move forward on.

We were also constantly told we need an additional investable Haynesville company. "We don't want to put all our money in the Northeast." We heard it repeatedly.

Investor Do you feel like the market was ready?
Marsh A couple of years ago we filed a confidential S-1 because we felt that we needed to be ready if the market was ready. We waited for the market to appreciate a natural gas

Vine Energy Snapshot

Ticker	NYSE: VIE
Headquarters	Plano, Texas
Market cap	\$1.2 billion
Focus	Haynesville Shale, Mid-Bossier Shale
Total acres	125,000
Net production	1 Bcf/d
Locations	878
Proved reserves	3.2 Tcf
Debt ratio	2.1x

Source: Company filings

company. We thought all along that a number around \$350 million was a target for what we wanted to raise and, in general, we got that accomplished. We had a very good reception from the investing community because we have a very good story.

Skepticism of being the first IPO in about four years was manifested in perhaps some smaller orders than what we thought. The stock price was obviously a bit on the low side so we were a little disappointed in that, but overall we were pleased to get it done because it did a lot more for us than just make us a public company. It allowed us to merge three entities that we had created over the last seven years and solve each company's financial challenges. Most of all we created a balance sheet that was very solid.

With operations solely in the Haynesville and Mid-Bossier shales in Northern Louisiana, Vine Energy completed its IPO in March.



VINE ENERGY INC.

“If a company can generate meaningful free cash flow, continue to pay down debt and also provide a very strong dividend to the investor, I believe the generalist investor will come back.”

Investor So do you think anti-fossil fuel sentiment on Wall Street was a headwind to going public at this time?

Marsh I think it was, but I actually think the bigger headwind is each company’s approach. Companies need to recognize that they’ve got to have a meaningful quantity of free cash flow that they’re going to deliver over a period of time. If a company can generate meaningful free cash flow, continue to pay down debt and also provide a very strong dividend to the investor, I believe the generalist investor will come back.

The oil and gas space has had a pretty good year in 2021, at times one of the better investments that any industry provided. So people are a lot more interested in it, especially the natural gas side of the equation being a cleaner investment. We think the generalists are looking at it because it definitely is a transition fuel that will allow us for the next 20 to 25 years to provide the energy that we all need.

Investor As a private company you’ve been on a growth trajectory. As a public company, will Vine continue to be an organic growth story? What’s your strategy on production growth to gain scale?

Marsh In 2020, we grew production in two companies at a pace of 29%. We were on pace to get to what we thought was the minimum size that we felt we needed to be at, and that was around 1 Bcf/d and at the same time generate free cash flow. But going forward our plan is to have very modest growth, meaning probably less than 5% a year, and maintain that 1 Bcf/d and grow it just slightly. We do not expect to be on any kind of growth trajectory that was anything like what we were in the past.

But really our goal is to increase the growth in free cash flow. What would drive down our well costs, our lease operating expense? We’re more focused on those items than growing production.

Investor Do you have a reinvestment of cash flow target?

Marsh Yes, 65% to 75% of operating cash flow would be reinvested.

Investor How do you plan to use the free cash flow? What are your priorities?

Marsh Priorities are straightforward in that we would have part of it go to debt pay down, because even though we talked about one and a half times leverage in 2022, we ultimately would like to get that down to the 1.0x range or less. We think natural gas companies in the future need to have less leverage. It allows you to deal with the commodity cycles that we have.

The other half would be to pay our shareholders with a nice dividend. We have not determined the exact formula on the dividend yet, but we’ve thought a lot about a fixed component and then a variable component to the dividend. We don’t see ourselves hitting our target leverage ratio of 1.5x until probably the end of the second quarter, maybe mid-third quarter of 2022. At such a time we hit that target, then we would begin to contemplate a dividend strategy.

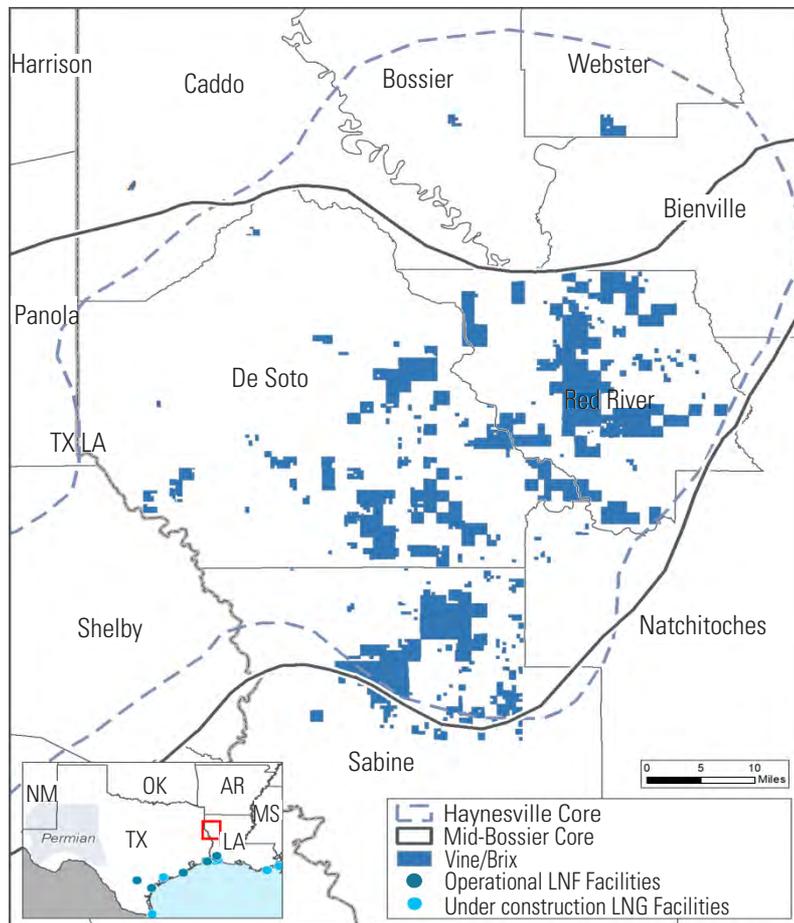
We believe we’ll be one of the few natural gas companies that can institute a meaningful dividend in the relatively near term, and it’s going to be a primary focus of the management team and our board.

Investor You also have a pretty robust hedging program. Can you explain your strategy behind that?

Marsh As a private company, Vine at the time was a bit over-levered, and we felt it was very important that we had our gas sold forward. It was very common for us to have two to three years of hedges in front of our program.

Now on the practical side, the way I think about it, I believe that we’re making a capital investment in drilling a well that will typically pay out in around 12 months. So I like the hedging profile to provide certainty of that gas price so that I know exactly when that well is going to pay out and I have a return on that capital. We’ve been real active hedgers over

Vine Energy Portfolio



Source: Vine Energy Inc.

the years, typically 80% to 85% hedged on our future production profiles, to solidify the returns that we generated year over year.

But going forward, as we pay down more debt and we have a better balance sheet, we will probably have a bit more exposure to the commodity price. So instead of being 80% and 85% hedged, we might choose to be more like 60% hedged. As you look at our 2022 program right now, we only have about 60% of our gas production hedged.

Investor Have the hedges limited your upside in a rising market?

Marsh We're on the wrong side of it this year, but in the previous six years we've been on the right side of it. It's been a real blessing for us to be able to keep a steady four-rig program running since 2016.

We bought this asset from Shell when it was 20% developed and 80% to be developed. We started out at a very high leverage ratio when we first bought the asset and it hadn't really been worked on for much of a year or two. We needed to drill wells to grow the asset and grow our PDP reserve base.

We did that by having certainty of our gas price. Having two, three years of hedges out in front of us to keep the program running allowed us to delever Vine materially. So, sometimes taking a little lower gas price and being able to keep our program running and growing the asset allowed us to survive in a really a rough industry.

Investor Does that include last year as well? Did the black swan events of 2020 have any effect on your program?

Marsh It didn't, for the most part. We knew what the commodity price was, and we knew what our returns were. We were generating 80% rates of return at a \$2.50 deck, which is where we had our gas hedged or a little better. So it made no sense for us to lay down a rig. We just plowed through it and continued to do what we do, and that is grow the asset and drill high-quality Haynesville and Mid-Bossier shale wells. From an operating perspective, 2020 had no effect on our program.

Investor How long have you worked in the Haynesville, and why have you stayed here so long?

Marsh The latter part of my career with Encana I was over the Midcontinent business unit (that included Haynesville assets), so I was very familiar with the Haynesville with our program we had had at Encana.

I have always felt that the Haynesville was underappreciated. A lot of that had to do with well costs being abnormally high in the early days, the 2009 to 2011 time period. We did not have the technology that we have today that allows us to drill wells as fast as we do. We have made remarkable improvements in well costs and, because of that, these wells that were marginally economic back in 2010 and 2011 are now highly economic, perhaps some of the highest return wells in North America.

And what makes it unique is this: The reservoirs that we deal with are the highest pressured reservoirs in North America. We have some of

"[The Mid-Bossier] is a core asset to Vine, no different than the Haynesville."

the deepest and hottest acres, at least on the Louisiana side of the play. Because of that high pressure, our wells often start out flowing at 9,000 to 10,000 psi well head pressure. On average, a well will produce eight months without decline in production volume.

We have wells that have produced 24 months without production decline. Now, during that time the pressure drops, but the production stays flat, so it allows you to capture a large quantity of that well's EUR in the first couple of years of its production, thus generating very high returns and quick capital investment payouts.

I've always felt the Haynesville was the premier natural gas play. When we look back at the economics, the asset is exceeding our expectations.

Investor Encana was a 50:50 partner with Shell in the Haynesville while you were there. Is that the reason you focused here when you launched Vine with the Shell acquisition?

Marsh Absolutely I was familiar with the asset. As executive vice president, I had teams that worked on that asset in the Haynesville.

But I've been a natural gas guy across North America. I've worked from Northern Alberta to the Gulf Coast and developed huge plays such as Jonah [Field], the Piceance Basin and we had a Marcellus position. I'm very familiar with all the gas plays in North America.

When we partnered with Blackstone we had the opportunity to get in the top natural gas play in North America. "Where would you go, Eric?" was the question. And I said, "Clearly, the Haynesville." We had an opportunity to go to any other basins and that's the basin we chose because of the strong economics that I thought would ultimately play out, which they have. And they've played out even better than what we thought.

Investor What is the breakeven price for your program?

Marsh The breakeven across our entire portfolio of 878 wells is \$1.91 per MMBtu at PV10, or with a 10% return. That's not cherry picking the lowest ones. Our breakevens are as low as probably \$1.45 on the low end, but that's the average breakeven for our portfolio.

Investor Do you feel that the Mid-Bossier is an underappreciated formation in Vine's portfolio? How do economics compare to the Haynesville?

Marsh Investors just don't know about it. There are not a lot of companies that have the Mid-Bossier. Indigo has it and Southwestern saw the value of the Mid-Bossier (as part of its pending merger with Indigo). They even talked to it in their conference call. To a lesser degree GeoSouthern [Haynesville] has some Mid-Bossier. But for a lot of the companies that work out to the northwest and north of us, it's not very prospective.

There's a fine line where the Mid Bossier works and doesn't work, and it's about 25% to 30% of the basin, primarily in the southeast portion where it works best. If you go too far north it's too clay filled and it just doesn't produce as well. We are blessed to have these two intervals.

Investor How important is it in your portfolio?

Marsh It's a big piece of our portfolio. It's a core asset to Vine, no different than the Haynesville. We probably drill on average 35 wells each year and typically 60% would be Haynesville and 40% would be Mid-Bossier. The Haynesville has slightly higher economics than the Mid Bossier, but very similar. The Mid-Bossier is probably a couple of notches down, but 80% versus 85% rate of return. Overall, the Mid-Bossier is comparable.

Today virtually every well we drill in the Mid-Bossier is at least 10,000 ft in length, and I think in the future it will be 15,000 ft in length; the longer the lateral, the better the economics. So on average, if your Haynesville well is 7,500 ft in length and your Mid Bossier is 10,000 ft in length, you generate similar returns.

Investor So are you codeveloping these? What does that look like?

Marsh We are. A typical pad has either three or four wells on it and typically half are Mid-Bossier and half are Haynesville.

Our strategy is a little bit diverse in that we develop that pad, get it on production and then we don't come back to that section for a year or so. We don't like to have these wells shut in for any length of time. We see some reservoir damage from that and we don't want to disturb their flow. Maybe it's a year, a year and a half later, we come back to that section to build another pad to finish the development out. We call it our rolling development. So we drill across all areas of our acreage each year.

Investor Would you look to gain scale via acquisitions now that you've gained the public platform?

Marsh Our market cap is about \$1.2 billion, and we definitely recognize that scale matters. However, we have developed a very good business that has 25 years of high-quality inventory, so we are not in a hurry to go out and acquire. We're more interested in turning in some good quarters, quarter after quarter hitting our free cash flow targets.

But on the other side of the coin, if we could find an asset that would bolt onto ours and have similar quality then, yes, we're definitely

Vine holds approximately 25 years of future drilling inventory across 227,000 net effective acres in the core of the Haynesville Basin.



VINE ENERGY INC.

interested. We see the bigger gas companies trading at a higher multiple, and we would sure like to trade at a higher multiple. It has to be balance sheet accretive and shareholder value enhancing.

But I'd also tell you that we could do it organically as well. Even though that asset produces 1 Bcf/d today, if there was an environment where you really wanted to do that, the asset certainly could produce 1.5 or 2 Bcf a day, not a problem. We could get there fairly quickly.

Investor What's your forward view of the LNG opportunity as well as other gas demand drivers around the Gulf Coast? Is the Haynesville advantaged from that perspective?

Marsh Yes, very much so. We think there's about 4 Bcf more demand today than there was a year ago, and that's driven primarily by LNG export, more gas to Mexico and better power generation with natural gas. We see that 4 Bcf a day tightening month over month, and we would expect natural gas to be in strong demand this winter and into 2022.

We think there is some modest growth out of the Permian and that will be pipeline capped. That could be another Bcf a day, maybe a Bcf and a half, but that's far short of the 4 Bcf incremental demand we're seeing.

What you're really seeing happen in the industry is companies like ours are going to keep their growth profiles at a minimum pace. They're working on getting their balance sheets corrected and generating free cash flow. They are not going to grow production materially. As a matter of fact, year-to-date, we're about a half a Bcf a day less production in '21.

So, overall, what has to give is prices will have to be a bit higher to spur demand from perhaps other basins or from companies that would want to change their strategy. We're not going to be that company. We're going to say stay focused on modest growth.

Investor Is Vine contracting directly with LNG export facilities?

Marsh We do. We've been a seller to the LNG facilities for some time. We do not hold any firm transport, and we market our gas through fixed sales. We sell our gas to credit worthy counterparties which could be a utility, an LNG producer or a petrochemical facility.

It's not uncommon for us to have 60% to 65% of our future gas production sold in fixed contracts. We do that on a regular basis. We think it's super important to be able to get paid when you do sell your gas.

That's why typically our basis differential is less. Normally it's been around 18 cents, and this [first] quarter it was 13 cents.

Investor Are you seeing a push in the market for sourcing "clean" gas?

Marsh We are hearing it from the LNG producers that are more in tune with the international buyers of LNG. The world's LNG consuming nations increasingly desire to source supply from low emissions basins and low emissions cargoes. That's where Vine can differentiate itself through its ESG leadership. We're working in concert with them to provide a product that they want.

"It's not uncommon for us to have 60% to 65% of our future gas production sold in fixed contracts. We do that on a regular basis.

We think it's super important to be able to get paid when you do sell your gas."

If you think about certified Angus beef, people pay a little extra for that. Perhaps there could be a little extra if you had certified gas as well. We're working on becoming a responsibly sourced gas-focused company and will do the necessary things to be a part of that.

We think over the next two to three years natural gas producers will certify their gas as responsibly produced, and we think that there's more LNG cargoes that will source responsibly produced gas. I think that will be something that the future will hold, and so we want to be a part of that. We think it's important.

Investor How are you implementing ESG considerations in your strategy?

Marsh We've made great progress with our ESG strategies. To date, it has really been focused on emissions. We've actually had reductions in emissions since 2017, so it's not anything really new to us. We've reduced our methane emissions by 62% since 2017, and we've reduced our greenhouse-gas emissions by 35% since 2017. So we're making good progress on that.

For instance, we use LDAR [leak detection and repair] technology to look for any leak in any flange. So when we turn on a new set of wells, within 30 to 60 days we're out there with a LDAR camera looking for any minute leak. By the end of this year we'll have virtually all our wells [monitored by] LDAR.

Sometimes an older well will load up and need to be released to a tank for a period of time. We use AI [artificial intelligence] technology to reduce the amount of time you'd have to blow a well to the tank, and it's reduced the number of times that that well will have to go to tank. That really cuts down on our emissions as well.

Our drilling rigs and our frac fleet are all bi-fuel. We use natural gas as well as diesel, but more natural gas to drill our wells and frac our wells. We think that's the best solution. We also are working toward having our produced water flow via pipelines instead of trucks, reducing the amount of diesel emissions that occur in our area.

Investor What is your view of the role of natural gas in the push for an energy transition?

Marsh Natural gas will play a meaningful role for the next 20 to 25 years. We're seeing electricity usage expand. As people drive more electric cars, as more things are electrified, more natural gas is going to be needed to provide the electricity.

“We see natural gas playing a very meaningful role in the clean energy transition.”

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Natural gas is a relatively clean and versatile

fuel with an extremely low delivered cost that doesn't require subsidies or mandated usage. We see natural gas playing a very meaningful role in the clean energy transition.

What people really need to recognize is the incredible progress we've made in our air quality in the U.S. Since 2007 energy related CO₂ emissions have decreased by 15%, which has largely been due to natural gas displacing coal. Now you take what we've done here in the United States by displacing coal and you apply that worldwide, we can achieve the same results worldwide.

Even though it's great that we've reduced our emissions here in the United States, it's a worldwide phenomenon. What we've been able to achieve the rest of the world is going to want to achieve. And I think natural gas plays a meaningful role in that. □



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BAKKEN REINVENTED

The maturing Bakken play continues to struggle with various challenges following the hit it took as a result of the pandemic. Producers now see it as a cash engine rather than a growth engine.

ARTICLE BY
ANNA KACHKOVA



“The Bakken was hit particularly hard in 2020, more so than other regions,” Rystad Energy’s senior shale analyst, Alexandre Ramos-Peon, said. “And we have seen some historically very active operators actually dropping their rigs by late 2020 and not really returning too much.”

North Dakota’s Bakken Shale play, in the Williston Basin, has seen its fortunes change dramatically since the early days of the U.S. shale boom. In 2012, North Dakota’s rig count peaked at 203, according to Baker Hughes Co., and the Bakken’s performance had not yet been eclipsed by the Permian Basin. The oil price downturn that began in 2014 led to North Dakota’s rig count falling to 22 by May 2016, and the subsequent years saw large numbers of operators flocking to the Permian ahead of other tight oil plays as crude prices recovered somewhat.

The latest downturn, driven primarily by the COVID-19 pandemic, proved worse still for the shale industry. In North Dakota, the rig count, which reached a new peak of 61 in April 2019—still far below the highs of 2012—had collapsed to nine by September 2020. While a tentative recovery has since begun and Baker Hughes’ data show the North Dakota rig count standing at 17 as of the end of June, these numbers illustrate the severity of the downturn’s impact on the region.

It is worth noting, however, that given the technological advances that have been made over the past decade, producers are able to do a lot more with a lot fewer rigs. Thus, a rig count that is less than one-tenth of what it was at its peak does not necessarily spell disaster for the Bakken—and if the more stable oil prices that have been seen so far this year continue, more rigs could be added by the end of 2021.

That said, the shale industry of today looks different and acts differently compared with the mass of small independents that drove the initial unconventional boom. A wave of consolidation that is still playing out has increasingly concentrated shale acreage in the hands of fewer, larger players, while access to capital has become increasingly constrained.

Thus, even if crude prices keep rising, public and private operators alike are more disciplined with their spending than ever before. And there are certain risks related to operating in the Bakken that have compelled some producers to shift their focus and their capital elsewhere. For those that remain, however, the

Bakken continues to hold potential, even if—as in the case of Hess Corp.—they now see the maturing play as a cash engine rather than a growth engine.

Taking a hit

“The Bakken was hit particularly hard in 2020, more so than other regions,” Rystad Energy’s senior shale analyst, Alexandre Ramos-Peon, said. “And we have seen some historically very active operators actually dropping their rigs by late 2020 and not really returning too much.”

For example, among some of the most prolific publicly listed Bakken operators, Hess Corp. dropped the number of rigs it was running in the play from six to one in May 2020. The company returned a second rig to the Bakken in February 2021. Hess executives who spoke at the J.P. Morgan Energy, Power and Renewables Conference in late June indicated they were strongly considering adding a third rig in the fourth quarter of this year.

The large, publicly listed players were not the only ones to drop their rigs as the pandemic took hold, though the smaller, private firms had fewer rigs to begin with. Liberty Resources II, which is backed by private equity firm Riverstone Holdings, was among the companies to stop drilling in the Bakken altogether after taking its sole rig offline last year.

“We decided to lay down our rig and, as a private company, we got caught up like many other companies in the redetermination of our borrowing base,” Liberty’s president and CEO, Mark Pearson, said. “We had a reserve-based loan, and in spring of 2020, the value of that loan was significantly reduced.”

Liberty’s subsequent steps illustrate how producers are resuming work in the Bakken, but this is not yet reaching pre-pandemic levels.

“We have restructured our balance sheet, and now have a plan moving forward where we’re going to be drilling at about a half-rig pace for this year. We’re looking to pick up a rig in August,” said Pearson. “Then hopefully by next year, we’ll move into a continuous rig development.”

The big difference now, he added, is that with so much less money available, private companies such as Liberty now have to drill out of cash flow.

Not every small, private player stopped drilling altogether last year, though. Privately owned Petro-Hunt LLC kept one rig and one completion crew running over the course of 2020. Petro-Hunt's director of corporate development, Marshall Hunt, said that while this could be attributed in part to uncertainties over the future of drilling on federal land as the U.S. presidential election approached, the main driver for the company was the low cost of oilfield services.

"[We were] working with the service companies that allowed for well costs that gave us the comfort to continue drilling," he said. Petro-Hunt worked with service providers to develop a win-win scenario for both parties based on a multiwell program rather than on a well-by-well basis, Hunt added. "And that ultimately generated efficiencies to allow us to keep going. Today, we've got one rig still going in the Bakken and one completion crew still going, and we have plans to continue with that at this time."

Hunt noted that advances in technology—especially on the drilling side—decreased drilling days to the point that one rig is now enough to keep up with the completion crew, whereas even a couple of years ago, two or three rigs may have been needed.

DUC backlog

Some companies, meanwhile, still have a backlog of completions to catch up on, having previously opted to leave some DUCs. The phenomenon is not new, but data from the U.S.

Energy Information Administration (EIA) show DUC counts across the leading shale plays to be on the decline. This suggests that these wells had helped to provide a cushion for drillers when crude prices collapsed and that they waited until more recently to bring more DUCs online.

This is true for the Bakken, too. EIA data show Bakken DUCs peaking at 884 in June 2020 and falling steadily since to 636 by May 2021.

"In North Dakota, there is quite robust fracking activity happening as we speak," said Rystad's Ramos-Peon. "This inventory of previously drilled wells—but not fracked—has been diminishing, meaning that operators have been really trying to leverage this inventory and not necessarily return their rigs to the field, but maintain their fracking activity."

Illustrating the rise in completions is one of the more prolific public companies in the Bakken, Continental Resources Inc., which said in its first-quarter earnings call that it expects the play to account for 70% of its completions or more in the second half of 2021. This compares with around 50% of completions at the start of the year.

As a result, while production in the Bakken is still declining, this decrease has been slowed, at least in the past couple of quarters, according to Ramos-Peon. "Current running rates of frac activity should be sufficient, at least to prevent further declines in the very short term," he said, but added that activity levels would likely need to be closer to 25 rigs before Bakken production can stabilize.



"The core has been known for a while now but the outer limits are expanding or becoming more commercial. Maybe what you really need to call it is the commercial core," said Marshall Hunt, Petro-Hunt's director of corporate development.



PETRO-HUNT LLC

Today, Petro-Hunt LLC has one rig and one completion crew going in the Bakken Shale.



“The opportunity to go and use enhanced oil recovery, boost that recovery factor, could have very significant impacts on the industry,” said Mark Pearson, Liberty Resources II president and CEO.

This is backed up by the EIA, whose latest monthly forecast projects Bakken production will fall by 4,000 barrels per day (bbl/d) in July compared with June to 1.098 MMbbl/d. The agency had been projecting monthly declines of around 20,000 bbl/d in the Bakken at the start of the year.

Completion evolution

Completions have also been highlighted as an area where some operators can outperform others, though over time performances have converged somewhat as producers have moved from experimentation to tried-and-tested methods that yield the best results.

“When we started working the Bakken in 2009 to 2010, what you saw was that there was more difference in completion designs across the basin than there was really in geological performance,” Pearson said. As a result, it was possible to produce more oil in the first year of a well’s life in a Tier 3 area of the Bakken with a high-quality completion than in a Tier 1 area with an inferior completion, he said. But over time, the most effective completion designs were identified and performance across the ba-

sin became more of a function of the geological area.

“Today, people run very similar designs,” Pearson said. “Everyone uses the plug and perf technique for completions, as opposed to sliding sleeves. Most people run slickwater of some form as well. Most people run many more perforation entry points or clusters, or single points, like we do. And the delta between the completion design, between operators has come down over time.”

This was backed up by Hess, which said it had fully transitioned to plug and perf completion design.

Core concept

The evolution of completions and other technologies means that even as the Bakken matures there is still significant potential for operators to maximize their production. This has the potential to go beyond what is considered to be the geologic core of the play—with oil prices also playing a significant role in how much of the Bakken can be developed and over what timeframe.

Examining what is happening to the Bakken core also serves to highlight the play’s limitations. Rystad’s Ramos-Peon said that among the oldest shale plays in the U.S., the Bakken



Hess Corp., which does not operate in any other unconventional plays, views the Bakken Shale as a cash generator.

HESSE CORP.

is the one with the smallest number of remaining premium—or Tier 1—locations, which he estimated at around 3,000.

“At the current rate of running activity, this would mean anything between six and 10 years, depending on how fast you go, so it’s not an imminent end,” he said, noting also that higher oil prices had the potential to change the overall picture.

Meanwhile, comments from Bakken operators illustrate the potential of areas beyond what is perceived to be the core.

Continental’s vice president of investor relations, Rory Sabino, said that while the company does not typically define what may or may not be considered the core of the Bakken, “positive results from recent step-outs in the past show that the perceived core of the play does continue to expand as learnings and technology are applied.” He added, however, that Continental was seeing “very consistent average Bakken well performance” across many areas of its footprint in the play.

Liberty’s Pearson, meanwhile, said his company owned minimal Tier 1 acreage, while most of it would be typically referred to as Tier 2 acreage. And operators would not necessarily want to drill such acreage at oil prices of \$40/bbl, with Pearson suggesting that they would likely need prices of \$50/bbl to move forward with development of these assets.

“If West Texas is over \$70, as it is right now, the economic reach of the Bakken has significantly expanded, for two reasons—price, and secondly, the actual capital costs,” he said. “We’re doing things so much more efficiently than we used to, the capital cost that we spend on a well is only 60% to 65% of what we used to spend four years ago.”

Thus, as operators become more efficient and unit development costs go down, the range of what would be called the core Bakken expands even if the crude price remains steady, according to Pearson.

Efficiencies were also flagged up by Petro-Hunt’s Hunt as one of the aspects to consider when discussing what constitutes the Bakken core.

“The core has been known for a while now but the outer limits are expanding or becoming more commercial. Maybe what you really need to call it is the commercial core,” he said. And as the commercial core expands, such areas can compete with the ultimate geologic core of the play, according to Hunt. “A lot of that has to do with the larger fracs and the advances in completion designs and techniques, as well as the overall efficiencies—quicker drill times, production efficiencies to lower the LOE [lease operating expenses],” he said. “You can make the wells work inside that commercial core to compete with the core zone. And as you inch outside of the core, you run into well cost concerns.”

Exploring EOR

Some of the players in the Bakken have also started exploring the potential to apply EOR techniques to their wells in the play. EOR has not yet taken hold in shale the same way it has

in conventional oil production, but it has been highlighted as having the potential to unlock harder-to-reach reserves in the future.

As unconventional plays mature, there will have to be some sort of mechanism to keep them productive and profitable, said Ramos-Peon. And, given the way that shale drillers were able to innovate with the stimulation techniques, he would not be surprised if they can ultimately do the same with EOR.

Bakken operators that have made a foray into EOR in the play include Hess, though the company told *Oil and Gas Investor* that there were no updates on its Bakken EOR program available at this time.

Liberty is also involved in EOR, and Pearson said it would have a second EOR pilot starting in September in collaboration with the University of North Dakota’s Energy & Environmental Research Center.

“We are doing a cyclic huff and puff injection program with a novel, lower-cost approach to EOR injection,” he said. And while such projects are at an early stage, Pearson has high hopes for their long-term potential.

“What industry does right now perhaps recovers 10% to 15% of the oil in place, so you’re leaving 85% to 90% of the oil—it’s not being recovered,” he said. “The opportunity to go and use enhanced oil recovery, boost that recovery factor, could have very significant impacts on the industry.”

Challenges

As they grapple with the question of how to maximize recoveries and returns, Bakken operators have some further challenges to contend with, on top of the depletion of Tier 1 locations. A particularly high-profile one is the fate of the Dakota Access Pipeline (DAPL). A judge has ordered regulators to carry out a new environmental review of the project, which is expected to be completed in 2022.

There have been positive developments for the 570,000-bbl/d pipeline recently—most notably the court ruling that DAPL not be forced to shut while the new review is completed. This, in turn, has boosted confidence in the pipeline’s fate among Bakken producers, though major shippers on DAPL have been making contingency plans to deal with a shutdown.

Among these is Hess, which ships about 55,000 bbl/d on the pipeline, and was saying a year ago that it had other options for sending its Bakken output to market if necessary.

A shutdown of an existing pipeline would be unprecedented; however, this has added to confidence that the pipeline will be able to keep operating.

“The recent news on DAPL has been encouraging,” said Continental’s Sabino. “Our perspective as an operating pipeline that has operated safely for years, is that it will continue to flow. I do not believe there is a precedent for an existing pipeline that has operated safely to be shut.”



“Positive results from recent step-outs in the past show that the perceived core of the play does continue to expand as learnings and technology are applied,” said Continental’s vice president of investor relations, Rory Sabino.

Continental has a comparatively small exposure to DAPL, however, at less than 5,000 bbl/d, and Sabino said the company was not exploring higher-cost contingency plans.

Hunt, meanwhile, characterized DAPL's future as a concern, but not a major one. Instead, he highlighted gas capture as one of Petro-Hunt's main challenges in the Bakken currently.

Like the Permian Basin, the Bakken yields large amounts of associated natural gas alongside its oil production. And according to Hunt, gas gatherers can struggle to keep up with output, even when activity in the play is relatively muted.

Cash generator

Despite the challenges there appear to be sufficient incentives to keep operators in the Bakken—and even expand in the play, as shown by Oasis Petroleum Inc.'s recent move to buy Diamondback Energy Inc.'s Bakken assets. Oasis is also in the process of exiting the Permian Basin, but while it shifts its focus to the Williston alone. Certain other operators, meanwhile, continue to view their Bakken holdings as fitting into a broader mix of assets.

“Some of the companies that have acreage both in the Permian and in the in the Williston, they keep their activity up there going on because they see these assets as a cash-generating assets,” said Ramos-Peon. “There is very little investment required to keep these

wells going, but they still generate positive returns and positive cash flows.”

This approach is not limited to producers that also operate in the Permian. For example, Hess, which does not operate in any other unconventional plays, views the Bakken as a cash generator, alongside its Gulf of Mexico and Southeast Asia operations.

As a result, Hess executives said the decision to add rigs in the Bakken would be driven by corporate returns and cash flow needs, which are a function of price. At a WTI price of \$60/bbl, the company estimates that it has around 2,200 future locations with IRRs at 15% or above.

In the longer term, Hess is aiming to produce 200,000 bbl/d in the Bakken, which executives said would likely require a four-rig program. At \$60/bbl, this positions the Bakken to generate \$850 million to \$1 billion per year of free cash flow for Hess. A four-rig program would still be below pre-pandemic levels for the company, once again illustrating a commitment to relative restraint. Continental is also taking a restrained approach, with Sabino noting that this has been a focus for some time.

“While we have talked about moderating production growth, this is not new and we have talked about this for several years as our assets are basically all held by production. We are able to focus on cash and corporate returns that can compete broadly across the entire market,” he said. “This is our focus, we are not focused on growth for growth's sake.” □

Continental Resources Inc. expects the Bakken Shale to account for 70% of its completions or more in the second half of 2021 versus around 50% of completions at the start of the year.



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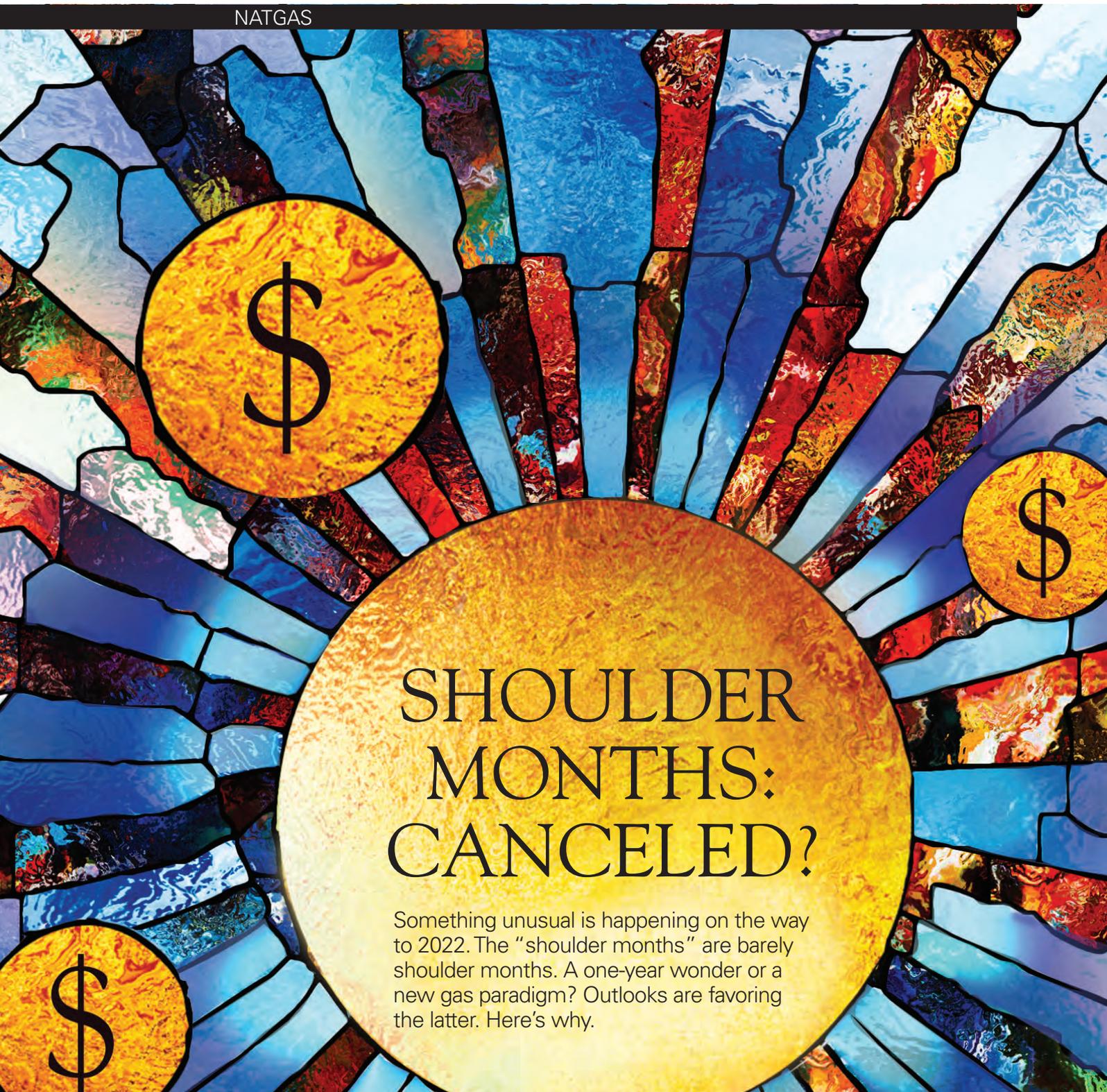
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SHOULDER MONTHS: CANCELED?

Something unusual is happening on the way to 2022. The “shoulder months” are barely shoulder months. A one-year wonder or a new gas paradigm? Outlooks are favoring the latter. Here’s why.

ARTICLE BY
NISSA DARBONNE

U.S. natural gas prices are higher this year than in 2019. They’re a lot higher. And not just in winter-month futures. The difference between shoulder-month pricing and winter-month pricing was barely recognizable in June.

And, overall, prompt-month prices grew to above \$3 and to as much as nearly \$4 for all months heading into next May. (2020 is excluded in comparisons because, well, 2020.)

The 12-month strip the morning of June 29 was \$3.45. The August contract was \$3.59. The January 2022 contract was about 20 cents—just 5.6%—more than the August contract.

A “heat dome” over the Pacific Northwest had raised alarms that may have prompted some of the June 29 pricing.

So, using pricing on the uneventful June 15 instead, the August contract was at \$3.27, while January 2022 was \$3.51—a 7.3% difference.

The gas rig count was 97, according to a J.P. Morgan report published June 25. U.S. gas demand was about 88 Bcf/d at the time, including exports that averaged about 18 Bcf/d that week.

Production was about 92 Bcf/d. But gas in storage was about 530 Bcf less than a year earlier—18% less.

In the past decade, shoulder-month prices have been as much as 50% or more less than winter pricing. Is 2021 just a one-year anomaly? Or are enormous, seasonal variations in natgas pricing diminished forever as the new 24/7 baseload of up to as much as 20 Bcf/d at times in LNG and Mexico exports soften the U.S. winter-heating blow?

Repricing natgas' future

Rob Turnham, president of Haynesville Shale producer Goodrich Petroleum Corp., said the variance might be narrower going forward. "The supply/demand balance is tight right now. A lot is in play into the next six months."

Among them is that the U.S. ended this past winter with a deep freeze settling across much of the Lower 48 and entered this summer hotter than usual.

The combination "means we could enter withdrawal season at a much lower storage number," he said, "which will set up winter and the back of the curve should move higher."

What happens after February remains a question mark. But, "if the weather plays out and producers remain disciplined, we expect to go into contango," he said.

Michael Hart, CFO of southern Eagle Ford Shale gas producer Rio Grande Exploration & Production LLC, said the market might just be finally catching up to the gas story.

But "I don't think there will be a shift from the shoulder seasons," he added. "Demand is, and is likely to remain, largely weather driven."

Instead, "I think this has more to do with a repricing of the long-term prospects of natural gas."

Indeed, as June 30 was unfolding, January gas was \$3.84; May gas, \$2.90. Thus, a more typical spread of about a buck appeared. Less typical, a buck difference was just 24% rather than 33%.

The repricing of all months' contracts is likely derived from more emphasis on the increased role gas will play in global efforts to limit CO₂ emissions. "With the success of Tesla and many of the U.S. car manufacturers announcing EV fleet plans, we would essentially be exchanging transport fuel from oil to natural gas," Hart said.

"I think this has led to the recent price response."

He noted there is still *some* seasonality to gas exports—both in LNG demand and in demand in Mexico. The latter "is even more likely to remain so due to lack of storage in the country."

More U.S. gas storage

U.S. gas storage is a matter of among traders' concern too, said Ben Sutton, CEO of gas-trading firm Six One Commodities.

"The North American market has grown enormously over the past decade. Meanwhile storage capacity in the U.S. has barely changed—and even has shrunk slightly in some regions," he said.

Meanwhile, the global gas market now depends on reliable U.S. supply—and, de facto, on U.S. gas storage. Mexico, for example, having no material amount of gas storage, expects U.S. storage to balance its demand.

"On an even larger scale," Sutton said, "LNG exporters can use the U.S. market generally—and U.S. storage particularly—to flex gas back and forth as their balancing needs require."

An example was during 2020 when Asian demand for LNG plummeted. That "left more than 800 Bcf of potential exports in the U.S. The North American market stored those would-be exports or diverted them to things like power generation.

"This flexibility will continue to be utilized as the global market requires it."

A thesis at Six One is that, while the U.S. is exporting gas, "we are *importing* market volatility from the entire globe. Storage assets help to balance the market.

"Therefore, we see existing assets appreciating in value and could see emergent business cases to create more capacity," he said.

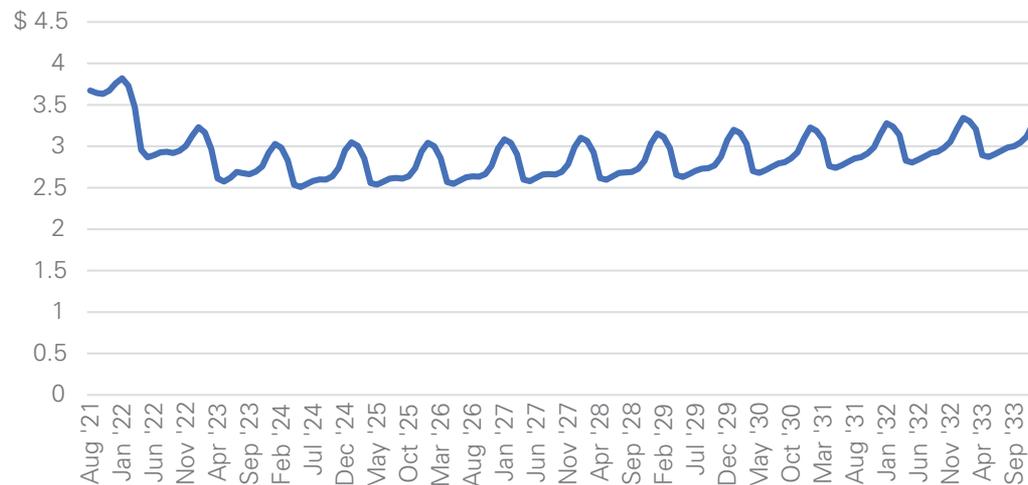


Rob Turnham, president of Haynesville Shale producer Goodrich Petroleum Corp., said the variance might be narrower going forward. "The supply/demand balance is tight right now. A lot is in play into the next six months."



Michael Hart, CFO, Rio Grande Exploration & Production LLC, said the market might just be finally catching up to the gas story. "I don't think there will be a shift from the shoulder seasons."

Nymex Natural Gas Futures, July 1, 2021



Source: Oil and Gas Investor



“I don’t think there is a paradigm shift in the gas-price seasonality as Mother Weather can still swamp exports.”

—Eugene Kim,
Wood Mackenzie

Exiting next winter

Eugene Kim, research director, Americas gas research, for Wood Mackenzie, said, “I don’t think there is a paradigm shift in the gas-price seasonality as Mother Weather can still swamp exports.”

LNG exports are greater in the winter, while exports to Mexico are greater in the summer. It’s correct that the seasonality of gas prices continues to be flatter, though, he said.

“But [it’s] also an artifact of the tremendous supply growth we have seen in the past still weighing down the gas market and the gas sensitivity backing out coal-to-gas displacement.”

And there’s something else to consider in the outlook for gas supply: Higher oil prices will result in greater associated-gas production; also, currently higher gas prices will result in more gas production.

“More telling is the widening [Spring 2022] spread as storage seems ample heading into this winter but not so much exiting it,” Kim said.

\$3 to \$4 going forward

What happens next spring? The push to greener fuels is a growing factor in gas futures. Gas

demand will rise as more coal-fired powergen is displaced by gas in Asia, in WoodMac’s “accelerated energy transition” (AET) model.

Also, “large-scale development of CCS/CCUS in the industrial and power sector supports gas, while the deployment of blue hydrogen is a gas growth segment,” reported Massimo Di-Odoardo, vice president, global gas and LNG, for WoodMac.

To satiate gas demand, gas producers will need to make more of it, Di-Odoardo said.

And, “as oil [demand, thus] prices, declines, gas will eventually trade at a premium to oil ... accelerating the shift of capital investment toward the sector.”

WoodMac’s view has Henry Hub gas trading at between \$3 and \$4 going forward.

“It is not until after 2040, when global gas demand begins to ease, that Henry Hub and LNG prices start softening due to increased competition of supply,” Di-Odoardo forecasts.

Meanwhile, to supply the gas, the LNG industry needs \$330 billion and gas producers need \$700 billion, he added.

>\$2.50 to 2033

On June 30, Nymex gas futures all the way to December 2033 were all at least \$2.51. Yes, to year-end 2033.

Sutton at Six One Commodities said demand abroad for U.S. gas will continue to grow. “The U.S. is the only global exporter that has a well-developed market behind the export points, including ample storage capacity,” he said.

“This new reality erodes the more traditional ‘shoulder’ vs. ‘peak’ demand periods as we have known them—because peaks and troughs in the U.S. domestic market can be offset or even enhanced by market forces in far-flung places.

“It is an exciting time to be in this business.”

The buyers have come

In 2009, Aubrey McClendon called Charif Souki. “You need to turn it around,” the late shale gas producer told the former LNG importer. Souki’s Sabine Pass LNG import facility on the Louisiana coast was nearing completion after more than 10 years in development.

When the work had begun, the U.S. was running out of gas. In the years that passed, the Barnett, Fayetteville, Marcellus and Haynesville happened.

By April of 2012, the Nymex price fell below \$2. There was more gas than demand. Demand needed to grow. “You need to turn it around,” McClendon told Souki.

Souki did, spending another several billion to install liquefaction trains. The fully completed Sabine Pass LNG export facility now loads more than 4 Bcf/d.

An import plant in Freeport, Texas, was turned around and ships more than 2 Bcf/d. Other liquefaction capacity is online at four other U.S. coastal terminals. And buildout continues on the Gulf Coast.

Natural gas suppliers built it; the buyers have come. □





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IS UPSPACING BETTER?

Wood Mackenzie research indicates Permian Basin wells are seeing better production from wider well spacing.

ARTICLE BY
BRIAN WAZEL



“In the Eagle Ford, they are using much tighter well spacing, around 330 ft on average versus in the Wolfcamp, it’s 600 ft to 800 ft,” said Amanda Richardson, senior research analyst with Wood Mackenzie.

More than seven years after the issue of frac-driven interactions (FDI) were first identified, operators are still trying to determine which well spacing patterns can both optimize production while also mitigating risk factors. Completion designs, well economics and the age of a play are also factors producers are considering when trying to better understand FDIs.

“If there is a risk of interference in the oil production, if you space the wells too tightly, that doesn’t necessarily mean that upspacing is always going to lead to better productivity because it really also depends on the rock and on the completion and on a whole lot of different factors,” said Amanda Richardson, senior research analyst with Wood Mackenzie. “So it’s not as clear cut of a trend as you might expect between productivity and spacing. It’s just a risk that needs to be mitigated basically.”

Wood Mackenzie recently compiled a report studying well spacing and productivity in the Permian and Eagle Ford basins. The study looked at well densities in both plays compared to basin maturity, the effect of co-completions on wells and single-well economics versus full section development economics.

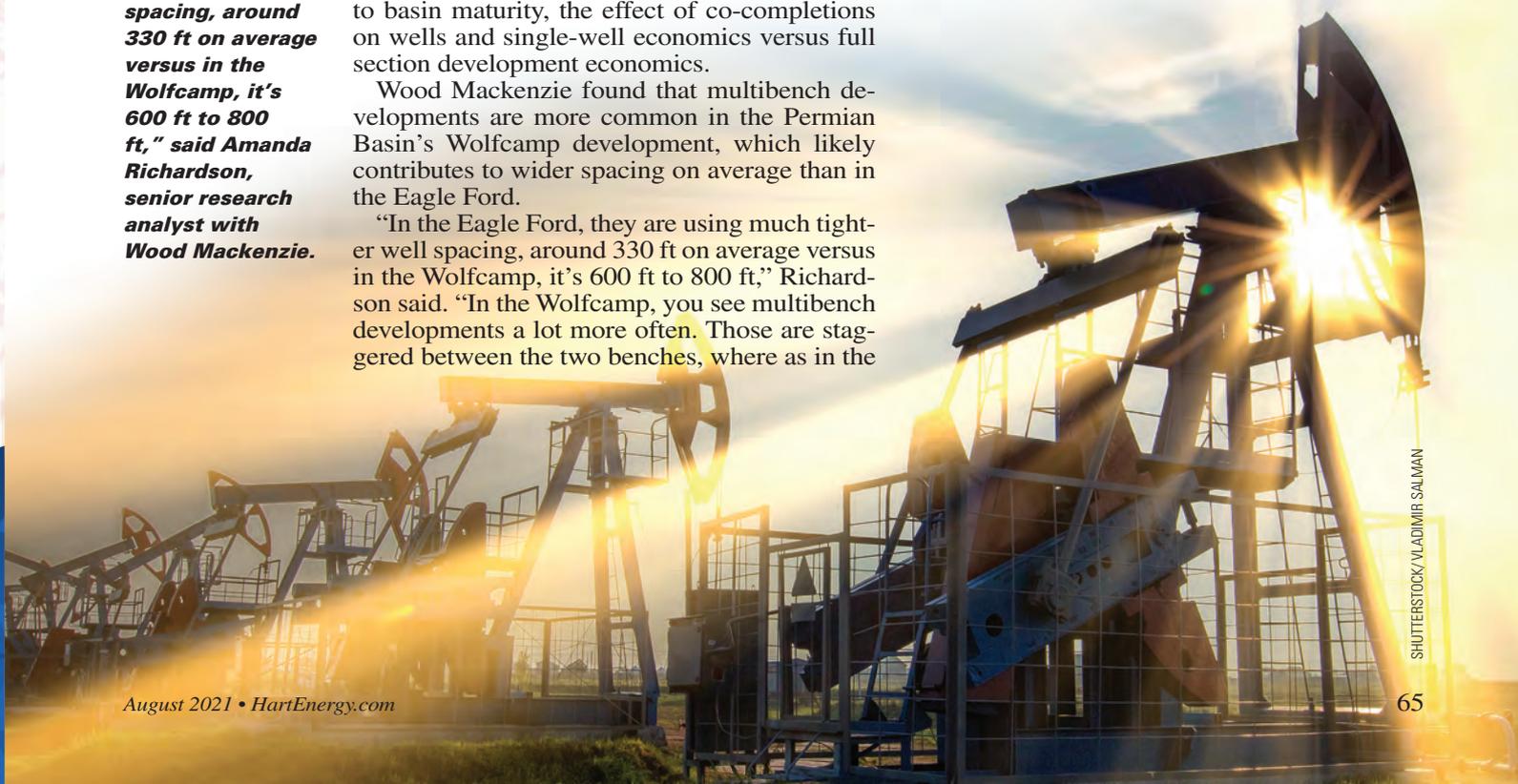
Wood Mackenzie found that multibench developments are more common in the Permian Basin’s Wolfcamp development, which likely contributes to wider spacing on average than in the Eagle Ford.

“In the Eagle Ford, they are using much tighter well spacing, around 330 ft on average versus in the Wolfcamp, it’s 600 ft to 800 ft,” Richardson said. “In the Wolfcamp, you see multibench developments a lot more often. Those are staggered between the two benches, where as in the

Eagle Ford you see more of that but also it’s just much more drilled out and there’s not as much room. So operators are getting the most value out of the acreages they have by fitting those wells in.”

According to Wood Mackenzie, the average horizontal spacing in the Wolfcamp in Reeves, Loving and Lea counties was about 1,300 ft in 2014. Since then, that spacing distance has declined to between 800 ft and 1,000 ft. In the Eagle Ford, well spacing distances have only varied slightly, particularly in the Hawkville and Maverick condensate plays where wells have typically been spaced about 600 ft apart. In the Edwards Condensate and Karnes Trough, the two most productive Eagle Ford subplays, average horizontal spacings have declined slightly from about 500 ft in 2014 to about 300 ft in 2020.

“[Well spacing in the Eagle Ford] really hasn’t changed a lot in the past three years,” Richardson said. “Prior to that there was more downspacing, but in recent years when you look at it on an average level at the subplays, it’s been fairly consistent.”



“I think the key question that is asked as operators theoretically continue to upspace [is] do you see performance follow or is it one where they just mitigated some of that risk of performance rolling over like we’ve seen in the Eagle Ford and portions of the Delaware Basin?”

—Ryan Duman,
Wood Mackenzie



“Generally, spacing is going to mitigate that risk or tailor completion design or other things to impact performance,” said Ryan Duman, principal analyst, Wood Mackenzie.

Production increases?

Despite the plateauing of well spacing, particularly in the Eagle Ford, Wood Mackenzie found those efforts haven’t necessarily led to production increases.

“The performance hasn’t shown a corresponding uptick though, and that’s where it’s hard to parse out the multivariate aspect of all of this and how impact spacing alone has,” said Ryan Duman, principal analyst, Lower 48 upstream with Wood Mackenzie.

He provided an example of the Midland Wolfcamp, where production related to well spacing has remained “about flat.”

Duman added, “I think the key question that is asked as operators theoretically continue to upspace [is] do you see performance follow or is it one where they just mitigated some of that risk of performance rolling over like we’ve seen in the Eagle Ford and portions of the Delaware Basin?”

Wood Mackenzie analyzed the impact co-completions along with upsacing might have on well performance and determined that while tightly spaced wells performed better if they were co-completed, they still underperformed more widely spaced wells on average.

According to Wood Mackenzie, co-completed wells in the Midland Wolfcamp with wide spacing (defined as 660 ft or more) produced about 35 boe/ft after 36 months on production, similar to wide-spaced wells that were not co-completed. However, tightly spaced wells that were not co-completed saw production fall to less than 30 boe/ft. Co-completed tightly spaced wells performed only slightly better, just over 30 boe/ft.

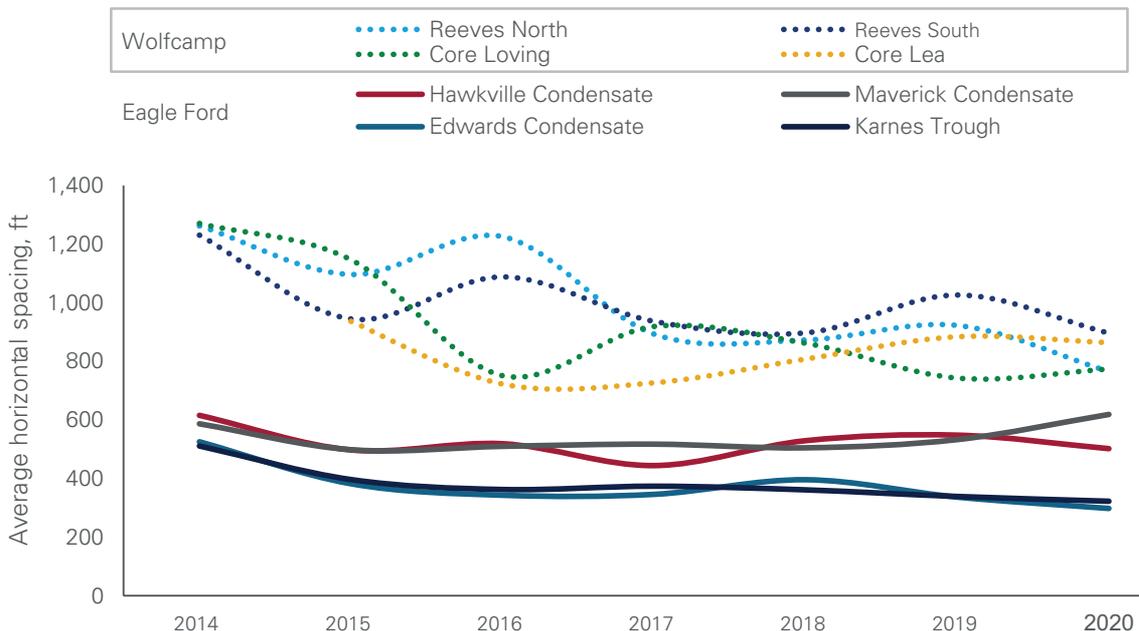
Over the years, there have been a variety of efforts and technologies emerge to help alleviate FDIs, some with more success than others. Proppant tracing and real-time pressure monitoring have each proven beneficial to varying degrees, but well spacing remains an inexact science.

“We’re years down the line, and there’s no simple solution or agreed upon solution that folks can employ,” Duman said. “Generally, spacing is going to mitigate that risk or tailor completion design or other things to impact performance. It’s dependent on individual operators and what rock they’re actually trying to exploit, which can make it challenging to try and do more of the basin-wide or very wide macro analysis.

In an analysis of Karnes Trough P50 type curves, Wood Mackenzie found that wells spaced 330 ft to 660 ft apart would be expected to recover about 10% more barrels per foot than wells spaced less than 165 ft apart. Widely spaced wells recovered about 44 boe/ft in the Karnes Trough, while tightly spaced wells recovered about 39 boe/ft.

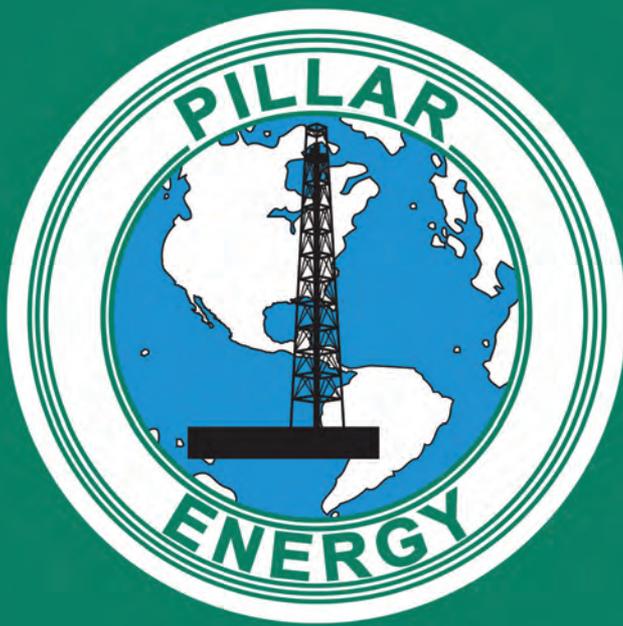
“If you look at sections, levels, NPV [net present value], payback or whatever metric of choice as you start to move wider, say six wells per section, you start sacrificing the amount of resource you’re going to develop and the overall value starts to decline again,” Duman said. “So it’s trying to balance that sweet spot of how much resource overall you can develop while accepting that individual well performance isn’t necessarily going to be the best that it possibly can be.” □

Spacing Over Time In Core Subplays



Wood Mackenzie found that multibench developments are more common in the Permian Basin’s Wolfcamp development, which likely contributes to wider spacing on average than in the Eagle Ford.

Source: Wood Mackenzie Lens Direct



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NAVIGATING A NEW NORMAL

Midstream companies are being called upon to better document their ESG initiatives as investors demand the implementation of such policies into their business plans.

There are enough acronyms in the midstream world to fill a dictionary, but in recent months, one set of initials has generated more buzz than others. ESG-focused documenting directives have emerged on the forefront of discussions throughout the energy sector—and beyond—as leaders acquiesce to a new level of investor expectations related to quantifiable ESG results.

Such initiatives have become a critical component of the license to operate, research shows. BlackRock Inc. in mid-2020 surveyed its clients to better understand the motivations and obstacles behind sustainable investing. It received feedback from 425 investors across the world, representing \$25 trillion in assets under management.

More than half, or 54%, of survey respondents said they considered sustainable investing to be fundamental to investment processes and outcomes. Related to ESG, 88% of respondents named the environment as the top priority, citing global warming.

The rising importance of ESG documentation is reflected in daylong seminars by industry majors such as The Williams Cos. Inc. In January, the company hosted its inaugural virtual investor ESG event, where it highlighted its several-year, progressive journey toward environmental sustainability. The company—which said it plans to reduce emissions by 56% by 2030 from 2005 levels—discussed its climate commitment, strategies and technologies during a series of executive-level presentations.

“By integrating ESG practices throughout the company and into our everyday operations, we hold ourselves accountable through transparent interactions with customers, employees and shareholders,” The Williams Cos.’ president and chief executive Alan Armstrong said. “In recent years we have significantly increased efforts to tell our story around these themes.”

The midstream sector has also recognized that satisfying ESG-focused directives isn’t just the right thing to do—it’s becoming a necessary component to success. The investment community is demanding oil and gas companies implement the guidelines into their business plans, particularly related to the environment. Midstream companies are responding through the implementation of new programs on monitoring and reducing emissions, and by incorporating renewable energy sources into their operations. As well, they’re working to offset their carbon footprint through environmental programs and energy transitions.

“ESG has become front and center across the board, not just for the midstream sector, not just for the energy industry, but for investors at large,” Pearce Hammond Jr., managing director of equity research at Simmons Energy, said. “Also, with the new administration, the expectation is there is going to be more pro-environment [measures], and so that’s going to put even more emphasis on the ‘E’. It’s become a more dominant narrative.

“More and more investors are integrating ESG into their decision-making process. And

so, you would assume that an investor is making investments where they feel like they can earn the highest rate of return,” he said.

Sustainable investments

If you think ESG reporting is a game of greenwashing, think again. A growing number of midstream companies are displaying quantifiable results, as numerous studies show the increasing role ESG is playing in attracting lucrative investment dollars.

McKinsey & Co. in a February 2020 survey of executives and investors found that 57% of respondents believe ESG programs create shareholder value, a figure on par with results from a similar survey in 2009.

However, the survey also showed that a growing number of investors are seeing the short- and long-term value in ESG programs. More than 65% of respondents now see value in the short term, up from 41% about a decade ago. About 93% of survey participants are now seeing social programs as a positive long-term investment contributor, up from 77% in 2009.

The BlackRock Investment Institute said in February that combating climate change will likely encourage economic improvements throughout the next 20 years. Sectors that shift toward net-zero greenhouse-gas emission goals will likely see higher returns, it said.

The green energy transition could result in a cumulative output gain of almost 25% during the next two decades, compared with the outcome if no climate change action is taken, the institute said.

“While the global green energy transition will benefit economic growth broadly, there are some asset classes and sectors better positioned than others as we shift to a net-zero world,” Simona Paravani-Mellinghoff, global chief investment officer of solutions at BlackRock’s multi-asset strategies and solutions business, said in a press release.

“We expect investor capital will flow toward these more sustainable assets, creating outperformance for green investments and separating leaders from laggards.”

Help from above

Last December, the Energy Infrastructure Council (EIC)—together with the GPA Midstream Association—released its first midstream company ESG reporting template. Composed after nearly a year of company and investor collaboration and thorough review of best practices, the template is designed to help companies present ESG metrics accurately, concisely and consistently.

“Many EIC member companies are at various stages of their ESG journey, and we really felt that it was critical to provide leadership at the association level. So, we established a board-level working group co-chaired by leaders in ESG. The mission of the working group was to provide best practices and guidance to help move our companies forward,” EIC president and chief executive Lori Ziebart said. “ESG continues to be an ever-important focus for the association and our members.”



“By integrating ESG practices throughout the company and into our everyday operations, we hold ourselves accountable through transparent interactions with customers, employees and shareholders,” said The Williams Cos. president and chief executive Alan Armstrong.



“ESG has become front and center across the board, not just for the midstream sector, not just for the energy industry, but for investors at large,” Pearce Hammond Jr., managing director of equity research at Simmons Energy, said.

“As a leader in this space, we hope to challenge others to establish similar goals.”

—Alan Armstrong,
The Williams Cos. Inc



“ESG continues to be an ever-important focus for the association and our members,” Energy Infrastructure Council president and chief executive Lori Ziebart said.



ESG standards have been a core value for EnCap Flatrock since its 2008 inception, and those values carry over to its portfolio companies, according to EnCap Flatrock managing director Morriss Hurt.

Right now, more than 100 ESG ranking and reporting templates are available, provided by firms with varying degrees of industry knowledge. Many of those guidelines were created by generalists, meaning some midstream companies are assessed on metrics that don’t apply to them. The EIC set out to create a reporting framework that would provide more meaningful data to investors. To ensure widespread adoption, GPA Midstream joined the effort.

“We felt it was important to develop a template with industry ESG and technical experts, together with investor input in order to provide metrics that are important not only to the companies, but to our investors and a wide range of stakeholders that are looking to analyze this type of information,” said Ziebart.

Developing the template was no easy task. It took stakeholders nearly a year to compile and agree on the most relevant types of information and metrics. Many iterations were created before the EIC and GPA Midstream published the final version.

Taskforce members began by reviewing the ESG landscape, including best practices among EIC member companies, ESG standard setters and raters and other trade associations.

Throughout the months, the taskforce met weekly with an assortment of professionals, ranging from ESG experts and IR professionals, to operational and technical experts. It also consulted heavily with its member investors to obtain their perspectives and guidance.

The template is designed to be the most relevant set of ESG guidelines for midstream investors and provide information on the ongoing evolution of other ESG reporting standards. It defines ESG metrics and provides companies with a series of questions related to environmental activity, diversity, board oversight and more.

“We feel that for it to be meaningful, it needs to reflect the evolving ESG landscape journeys of midstream companies, while also meeting the needs of investors,” Ziebart said.

In February, just two months after the template was released, the EIC, together with GPA Midstream, announced that several of their member companies had completed the ESG reporting template. Among the early adopters were Crestwood Equity Partners LP, Enterprise Products Partners LP, ONEOK Inc., Western Midstream Partners LP and The Williams Cos.

Other companies, including DCP Midstream Partners LP, Energy Transfer LP, Magellan Midstream Partners LP and Plains All Ameri-

can Pipeline LP, publicly announced they were in the process of gathering data. Right now, the EIC said there are about 10 companies in the process of completing the reporting template.

The EIC is ultimately hoping for widespread adoption to provide companies and investors with a greater overview of ESG progress throughout the midstream sector. Other agencies such as the Edison Electric Institute (EEI) and the American Gas Association (AGA) have been successful in establishing ESG metrics for a longer period of time, and their reporting framework is now commonly used within the industry. The EIC consulted the EEI before releasing its own template.

“EEI and AGA have had great success in getting widespread adoption of their template. Investors and other stakeholders look to that template to be able to make informed decisions about the ESG progress that member companies are making,” Ziebart said.

“We firmly believe that, like the EEI/AGA template, [our] midstream reporting template—which provides accurate, quantifiable, durable and comparable company ESG metrics—will receive widespread adoption and serve as a valuable resource to investors and stakeholders alike.”

An investment perspective

For venture capital firms such as EnCap Flatrock Midstream, meeting ESG standards is nothing new. It has been a core value for the firm since its 2008 inception, and those values carry over to its portfolio companies, said EnCap Flatrock managing director Morriss Hurt.

“We want to ensure that we have alignment with the companies in our portfolio in this area,” said Hurt. “It’s not just about maintaining your license to operate. It’s also a core part of the way we do business.”

One of its portfolio companies, Stakeholder Midstream, in 2019 installed an emissions injection system, which sequesters CO₂ rather than emitting the greenhouse gas. The company also executed an expansion in one of its processing plants to accommodate gas that was previously flared by producers.

Meanwhile, EnCap Flatrock’s portfolio company, Cardinal Midstream III, recently received a commendation from the Oklahoma Department of Wildlife Conservation for rerouting a pipeline to protect a bald eagle habitat it had identified.

“It was the right thing to do. Sure, it was more expensive, and at a minimum this falls under maintaining a license to operate,” Hurt said. “But these are things that you should do—and want to do—and we view these practices as necessary for responsible midstream operators.”

Its portfolio company, Rangeland Energy III, worked in Canada with First Nations to mitigate pipeline construction impact to sites of cultural importance and wildlife sensitivity.

Lotus Midstream extends strong governance beyond the boardroom and into the field, said Abigail Rimel, an EnCap Flatrock vice president.



ENCAP FLATROCK MIDSTREAM



Cardinal Midstream didn't hesitate to go to the expense of relocating a pipeline to avoid disturbing a nesting place for two bald eagles, America's national symbol.

“They have a chartered safety engagement team made up of salaried and hourly employees that have direct access to the CEO to really make sure that the safety programs are robust and implemented in a comprehensive way,” said Rimel.

“We recognize that maintaining a focus on ESG is not only the right thing to do but critical to our long-term strategy and stakeholder support. Given the increasing importance to our stakeholders, we believe it’s critical to both managing the operations and the risks associated with the businesses we invest in.”

Keeping up with the changes

ESG reporting is evolving, and as it progresses, so too does EnCap Flatrock’s approach. To help its companies keep pace with best documentation practices, the firm has implemented numerous audits and reviews regarding internal financial controls, cybersecurity, and policies and procedures.

“This goes to ensuring consistent and strong governance practices across our portfolio,” Rimel said.

Internally, EFM has established an ESG committee comprised of investment and accounting professionals to ensure the topic remains top of mind. To enhance documentation, it has engaged an outside firm to help establish, benchmark and improve ESG reporting practices and metrics for its funds, portfolio companies and various stakeholders. The partnership will help EnCap Flatrock formalize the need for more consistent ESG disclosures and improve its collection of metrics as it looks to aggregate data from across its portfolio. The goal is to have a firm-wide set of ESG data available to share with investors and stakeholders.

Some EnCap Flatrock portfolio companies are enhancing their ESG disclosures in the form of sustainability reports, while others are preparing to do so.

From an industry engagement perspective, EFM has joined the EIC.

“As the largest pure-play midstream investment firm in the country, we want to be an active part of this dialogue, both learning from companies that are doing really well, as well as guiding and leading the conversation as ESG reporting evolves,” Rimel said.

Talk of the town

Although ESG directives might have hardly garnered a thought a few years ago, the topic is now significant enough to dominate daylong discussions and conferences among midstream majors such as The Williams Cos.

Williams’ annual sustainability report, set to be released this summer, uses qualitative descriptions and quantitative metrics to lay out its policies, practices and performances across the ESG board. Understanding the link between sustainable operations, corporate stewardship and long-term financial success, Williams’ ESG efforts can be seen across the company, from executive boardrooms to everyday operations.

Forward-thinking leadership

Williams’ focus on near-term, tangible emissions reductions is led by charting a path to net-zero emissions by 2050. Its admittedly rigorous strategy is backed by a dedicated renewables team and a \$400 million investment in solar projects across nine states that will supply energy to its facilities. It expects the first solar project to go online in 2023.



“We recognize that maintaining a focus on ESG is not only the right thing to do but critical to our long-term strategy and stakeholder support,” said Abigail Rimel, an EnCap Flatrock vice president.



EAGLECLAW MIDSTREAM

The East Toyah plant shows an operator using an optical imagery camera, which can detect the presence of a methane leak.

As well, Williams is increasing the delivery of renewable natural gas (RNG) by partnering with energy companies in Washington, Idaho, Ohio and Texas to transport methane emissions captured from landfills or dairy farms. Its Northwest Pipeline is interconnected with four RNG facilities (two were brought online in the past year), and the company said it is pursuing additional RNG partnership opportunities.

Harnessing the power of hydrogen is another emerging opportunity where Williams has recently begun committing time and resources.

“Williams’ nationwide footprint is well-positioned with end-use demand, particularly in highly populated areas, to participate in hydrogen-based energy storage and transport,” said Armstrong. “Our ability to blend hydrogen into our existing system is a significant advantage and has the potential to accelerate the use of hydrogen in reducing carbon emissions.”

The company, which is a member of the Clean Hydrogen Future Coalition, plans to advance its hydrogen roadmap this year to showcase how Williams can play a role in bringing clean hydrogen to market.

Williams also co-led the EIC’s midstream ESG reporting template initiative and was among the first companies to document its ESG efforts through the template.

“Our desire to lead in this area is driven by our core values and always striving to do what is right,” Armstrong said. “Williams is focused on sustainable operations, including ready-now solutions to address climate change. We will leverage our natural gas-focused strategy and technology that is available today to focus on immediate opportunities to reduce emissions, scale renewables and build a clean energy economy—but we also are looking forward and anticipating future innovations and technologies that we can use our key energy networks to deliver on the next phase of energy transition.

“As a leader in this space, we hope to challenge others to establish similar goals.”

The early mover advantage

EagleClaw Midstream, the largest privately operated midstream service provider in the Delaware Basin, has been an early mover in the ESG space. It announced in January that it successfully implemented numerous ESG-related initiatives, ranging from the use of renewable energy sources, to supporting economically disadvantaged communities during the pandemic.

The company in April became the first midstream company in the Permian Basin to source 100% of its electricity for operations from solar and wind. Its switch to renewable energy will help EagleClaw Midstream reduce emissions, its chief executive, Jamie Welch, said.

“For us, it was a tremendous benefit,” said Welch. “It obviously does create a very nice, and I think very positive environmental message statement for our producers.”

On the social side, the company has helped push struggling Texans through the ongoing COVID-19 pandemic. The Midland, Texas-based company offered financial support to local residents and made donations to area food banks. It also helped schools with sanitization efforts and donated computers to help students with remote learning.

“This time last year, in the Midland area particularly, was quite crushing for many people,” Welch said. “Obviously, we saw oil prices just plummet, and we saw a tremendous amount of redundancies, furloughs and reductions in force throughout the energy industry. So we really went out of our way, as a company, to come together and make sure that we gave back to the community.

“I think it galvanizes the spirit of this company. Giving back is such a critical element of who we are and what we do every day.”

Welch added that EagleClaw Midstream crossed another significant sustainability milestone in 2020 with the addition of Laura Sugg as the first independent member to its board of directors. Sugg is a longtime energy industry executive and the second of two women who serve on the EagleClaw Midstream board.



EagleClaw Midstream’s efforts in being an EGS frontrunner have helped satiate the demands of both the public and investors, said Jamie Welch, EagleClaw Midstream chief executive.



Getting with the program

EagleClaw Midstream is financially backed by Blackstone Energy Partners and I Squared Capital, which have dedicated teams focused on ESG for their portfolio companies. EagleClaw Midstream established its own ESG program more than a year ago, engaging many of its senior executives to work together to consolidate data and better document the company’s undertakings.

In February 2020, the company hired Jim Schwartz, who as senior director of sustainability was tasked with working with leadership to coordinate and create a workflow. An outside consultant was commissioned to bolster those efforts. The company hopes to release its first ESG report later this year.

EagleClaw Midstream reports in alignment with the Sustainability Accounting Standards Board, Global Reporting Initiative, Task Force on Climate-Related Financial Disclosures and the GPA Midstream Association standards.

Documenting and consolidating all of EagleClaw Midstream’s data was a time consuming and challenging task, said Welch.

“It’s been a very large endeavor to compile all the historic data because obviously it goes back, but we want to make sure that all the data is accurate so what we put out there presents and conveys a very accurate measure of our performance,” Welch said. “It takes a village to pull this together. But invariably, the product—and what it says and what it reflects about our company—is pretty important. It has been a lot of work from a lot of people, but it is well-justified and certainly I think it’s a good story to tell.”

A demonstration of progress

EagleClaw Midstream’s efforts in being an ESG frontrunner have helped satiate the demands of both the public and investors, Welch said.

“I think we were very early to clue into the fact that public investors, and our own shareholders, were already craving data and information about our environmental track record, more so environmental than I will say, social and governance,” he said. “Let’s face facts: The oil and gas industry has a somewhat negative image in the eyes of the public because of its environmental track record. In recent years, the industry has focused on further advancing its role in the whole discussion on climate change and the impact on the planet.”

Welch said he’s particularly proud of his company’s work reducing emissions and its carbon footprint. It uses thermal imaging equipment at its processing plants to help capture fugitive emissions and is planning to go electric with its fleet of more than 100 vehicles.

In today’s world, he said, midstream companies must take such forward-thinking initiatives to garner public support and attract investments.

“The world is all about choice and for investors, it’s no different,” Welch said. “We have made conscious decisions to be at the bleeding edge as it relates to taking actions on the ESG side. I think it makes it easier for investors ... You need to show them that you are actually more a part of the energy transition.”

A mutually beneficial agreement

Any midstream company wishing to win the sought-after dollars of investment companies in today’s world must show that they’re serious about operating in an environmentally responsible manner. It could mean selling off assets that don’t align with current requirements, correcting methane leaks or building new pipelines to boost hydrogen, said Simmon’s Hammond.



Midstream Companies ESG Actions

Company	ESG Actions
Kinder Morgan Inc.	Founding member of ONE Future, a coalition of members across the natural gas value chain focused on identifying policy and technical solutions that reduce methane emissions associated with the production, gathering, processing, transmission, storage and distribution of natural gas.
The Williams Cos. Inc.	A \$400 million investment in solar projects across nine states will supply energy to its facilities.
Enterprise Products LP	Adjusts construction schedules to avoid sensitive seasons; adjusts routes to avoid sensitive areas; safely drills or bores under certain habitats and water bodies to minimize disturbances.
Rangeland Energy III	Worked in Canada with First Nations to mitigate pipeline construction impact to sites of cultural importance and wildlife sensitivity.
Cardinal Midstream III	Rerouted a pipeline to protect a bald eagle habitat.
Lotus Midstream	Has chartered safety engagement team made up of salaried and hourly employees that have direct access to the chief executive.
EagleClaw Midstream	Uses thermal imaging equipment at its processing plants to help capture fugitive emissions; is planning to go electric with its fleet of more than 100 vehicles.
Crestwood Equity Partners LP	Continuously improve transparency its ESG disclosure and engagement with ESG investors.
DCP Midstream Partners LP	Raised and contributed more than \$1.4 million for nonprofit causes in 2019, focusing on local and regional giving.
ONEOK Inc.	Reduces emissions by improving the efficiency of various pipelines, natural gas processing facilities and NGL fractionation facilities.
Western Midstream Partners LP	Its strategy focuses on three areas: supporting sustainable environments, focusing on people and operating responsibly.
Plains All American Pipeline LP	Since 2005, Plains has removed thousands of miles of pipeline from service that do not meet its integrity standards; it has constructed thousands of miles of new pipeline to meet or exceed industry standards.

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“You’re seeing more and more companies dedicate more time, and resources, to this,” Hammond says. “I think that the midstream companies actually have a key role to play in the ultimate decarbonization that’s going to unfold over the next number of decades.”

Lessening the environmental footprint of energy projects can pay off in more ways than one for midstream companies, he said. For instance, ensuring equipment is not leaking methane into the atmosphere would give a company the ability to capture more gas while satisfying the requirements of investors.

“Ultimately, that would be good for both parties,” Hammond says. “You’d have more natural gas to sell so you’d have revenues to offset the cost of the enhanced regulations. I think that for midstream, there’s certainly some things that they can do.”

The social aspect

From the social perspective, ESG directives can be more broad-ranging, including fair pay for women, and an expectation of diversity in the workplace. Board members and management teams, in particular, are expected to reflect an inclusive company culture.

In some respects, such affirmative action-type

demands have been controversial, since they could hinder recruiting efforts, said Hammond.

“If you’re a shareholder, you want the best people serving on your board and you want the best people serving on the management team to deliver the best-run company,” he said. “And you need to be open minded about finding the right people and meeting diversity and inclusion goals. Companies are making it work, but it takes time.

“The struggle is to be open minded and be fair, and allow everybody to compete for the positions. But you also have to make sure you get the right people running your companies. The thing that a lot of these investment companies look at is the board. These boards are very white male-dominated, and they’re trying to make them less so moving forward.”

Resistance to the rules

Companies that resist the ESG guidelines are likely to find it harder to operate in the midstream space, said Hammond, adding they’re also likely to face a higher cost of capital.

“It’s going to be harder to raise money,” he said. “There’s probably a certain number of investors that won’t consider you. And so you have a limited pool of investors to pick from. So, hence your cost of capital would be higher making it more expensive to raise money.” □



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ROYALTIES WHEN CRYPTO MINING

Oil operators are using their stranded associated gas in crypto mining at well sites. Do they owe royalties on the earnings? Do they owe it in crypto coin?

ARTICLE BY
RYAN J. MORGAN

By now, several E&P companies have been in conversations with crypto miners and many more have been hearing and reading about this latest innovation making waves in the oil patch.

At the simplest level, mining for digital coin requires just three things: access to electricity, a bank of specialized mining computers and a connection to the internet.

Given the simplicity, a mining farm can be set up nearly anywhere. Internet and computer access are fairly ubiquitous. So savvy miners seek a competitive advantage in the third piece of the puzzle: lower-cost electricity.

A couple of common targets include sites with excess electricity-generation capacity

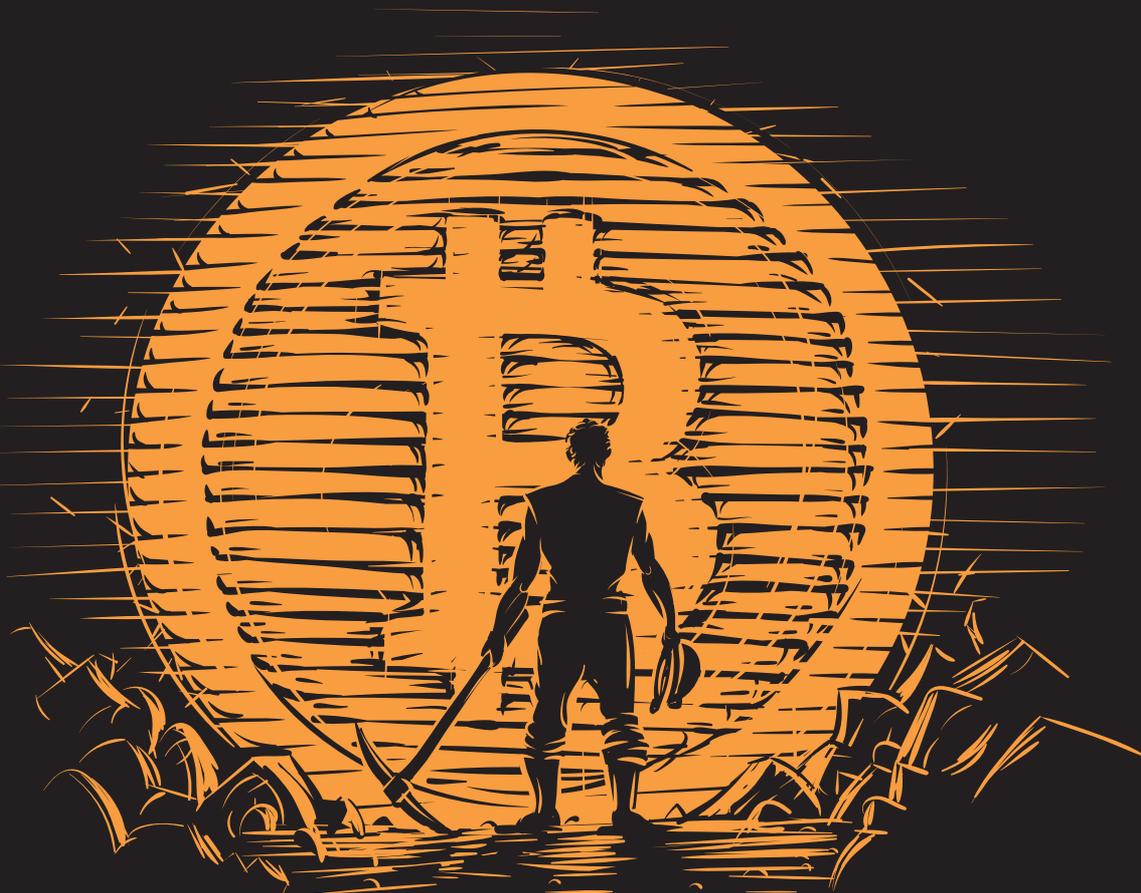
and oil wells that are producing otherwise-uncommercial associated gas.

Finding unused or stranded natural gas makes for a perfect opportunity to bring in a generator and accompanying array of mining computers.

Crypto value

A look at the cryptocurrency business explains the flurry of activity. The market value of Bitcoin is more than \$600 billion; Ethereum, more than \$307 billion; and a handful of others, more than \$300 billion combined, according to Forbes.

It is a complex process by which mining takes place. In short, specialized interconnected computers complete complex transactions, earning crypto coin for the miner.



The digital coins' rise in value has led to a boom in mining over the years. Bitcoin was worth between \$30,000 and \$40,000 in late June. In 2018, it was worth less than \$3,500.

And, while the value grew, the cost of mining it was virtually unchanged. Miners were able to profit even when Bitcoin was \$700.

Since then, their profit margin has merely grown.

The lack of laws

As the combination of crypto coin and oil wells is a nascent industry, using stranded gas in crypto mining creates a number of potential legal issues that are not clearly addressed in current law.

Are royalties owed? Are there tax obligations? Are there permitting and siting requirements? Environmental issues? Is there any regulatory oversight imposed on any piece of the activity? For example, what are the state rules on the sale/transfer of gas to the electricity generator and the sale/transfer of electricity to the mining operation, if any?

A good place to start this analysis is with a careful review of your contractual obligations—e.g., your lease, farmout, development agreements.

As for laws and regulations, we do not expect to see any clear answers in most cases in, at least, the near term.

Exceptions to this are in Wyoming and North Dakota. The former recently passed legislation (HB0189) to exempt from severance tax the natural gas that would otherwise be flared, including when that gas is repurposed for use in crypto mining.

North Dakota passed legislation (SB2328) to provide a tax credit for capture and repurposing of gas that would otherwise be flared.

Lacking more clarity, a further nuanced evaluation should begin by considering three issues raised by this opportunity:

- What is being, or would be, done with the gas in the absence of its use for electricity generation?
- Is the gas a marketable commodity or an unused byproduct?
- What compensation is the well operator receiving from the cryptocurrency mining?

Royalty obligation?

The most direct way to ensure certainty as to the royalty obligation is to secure a written agreement with the mineral owner. Many operators may think they are not in a situation where that is a desirable option. So we turn now to the most common answers.

Nearly all oil and gas development in the U.S. is conducted with an underlying lease agreement. At its core, it allows the operator to extract and sell the hydrocarbons in return for a payment of a percentage of the revenue.

Many modern leases allow the operator to use some of the produced hydrocarbons to generate electricity on site for operations. The scope is often not clearly defined. But it is generally understood to cover reasonable activity that furthers the purpose of the lease:

At the simplest level, mining for digital coin requires just three things: access to electricity, a bank of specialized mining computers and a connection to the internet.

producing and selling the hydrocarbons.

The lease assumes the operator has an appropriate economic incentive to get the hydrocarbons to market.

In many U.S. basins, operators are able to readily connect and sell produced gas downstream. When an operator elects to utilize some of that gas to generate electricity for crypto mining, there will normally be an agreement with the mining firm or an agreed contract price that provides the basis for appropriate royalty payments to the mineral owner, subject to any specific terms in the lease.

The latter basis for calculating royalties applies unless the operator is taking the position that the mineral lease is written in a way that supports this gas-fired generation being covered by the operator's fair-use provision.

In places like the Williston or Permian basins where the primary hydrocarbon is oil, many operators either lack physical takeaway capacity or market prices do not make transportation and treatment economic.

In these cases, repurposing the gas for crypto mining is particularly attractive.

Generally an operator incurs no royalty liability on the volumes of gas produced from wells when the gas is not sold downstream. When the operator allows a third party to capture this unused gas as an environmental-mitigation strategy, it should not incur any new royalty liability.

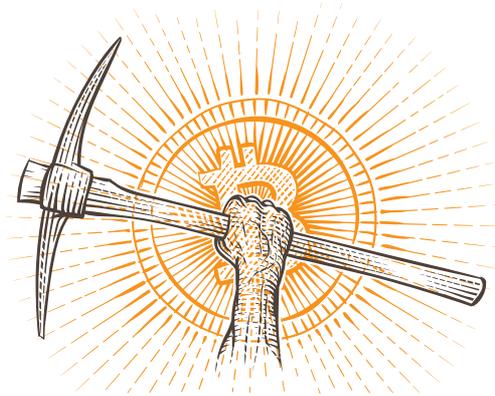
We would expect this to be particularly true where the operator truly receives no financial benefit—neither via direct payment nor via having a financial interest in the mining venture.

The test

At the same time, crypto mining takes gas that was an unused byproduct and turns it into a product with a market. A thoughtful review of this argument should focus on whether:

- The gas is now being sold to a third party, in which case the normal terms of the lease will govern royalties due on sale proceeds;
- The gas is truly being captured without compensation to the oil operator as a preferred environmental-mitigation method, in which case good public policy should not impose any new royalty obligation that did not exist when the gas was being vented or flared; or
- The operator is deriving some indirect benefit, such as membership in the mining venture or receipt of a portion of the earned cryptocurrency.

As a result of this volatility and the conversion of currency, any venture that will include a calculation of economic benefit or payment of compensation based on a value of cryptocurrency requires careful and thoughtful drafting.



The potential outcome of a legal challenge in this third situation is the most difficult to predict.

The best guidance for the case in which an operator forms a joint venture or owns an equity stake of some sort in the mining enterprise would be the existing jurisprudence on affiliate transactions. This situation is not unlike when an operator enters agreements to sell gas to its gas gathering and/or midstream affiliate.

Here the operator will need to be prepared to explain and defend the economic terms of the transaction, including what the fair value of the gas would be if sold to a different party.

In cases where no value is attributed to gas that would otherwise be vented or flared, the operator would need to demonstrate that the mining project would be uneconomic if not for the gas having no value.

Coin to USD

Potential complexity arises in those cases where an operator has the opportunity to be compensated by receipt of some portion of the cryptocurrency.

Unlike U.S. dollars, the value of cryptocurrency is extremely volatile. When converting it to USD, the royalty paid to the mineral owner could vary wildly depending on the coin's value at the time it was posted to the mining company's account, posted to the operator's account or sold and converted to U.S. currency.

On June 21, for example, a Bitcoin earned by the miner was worth around \$35,000. When transferred to the operator on June 23, it was worth around \$29,500. When converted to USD and paid out at the end of the business day June 25, its value was \$32,200.

As a result of this volatility and the conversion of currency, any venture that will include a calculation of economic benefit or payment of compensation based on a value of cryptocurrency requires careful and thoughtful drafting.

Conclusion

An operator's analysis of its obligation to pay royalties starts where nearly all similar questions begin: a careful reading and understanding of the terms of the governing documents and review of applicable statutes and regulations—or lack thereof.

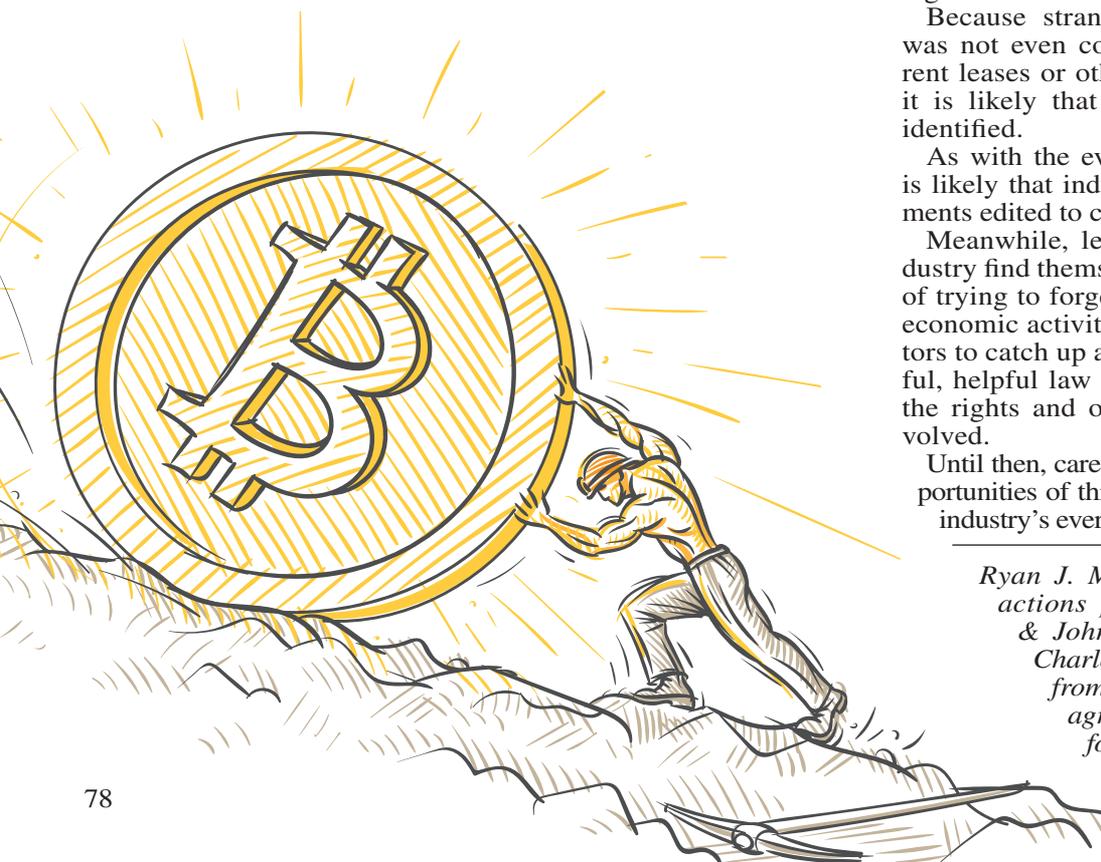
Because stranded gas for crypto mining was not even contemplated when most current leases or other agreements were signed, it is likely that no clear provision will be identified.

As with the evolution of all agreements, it is likely that industry will begin to see documents edited to cover this and related topics.

Meanwhile, leaders in the oil and gas industry find themselves in the familiar position of trying to forge ahead with productive new economic activities while waiting for legislators to catch up and pass (hopefully) thoughtful, helpful law to fill in the gaps, balancing the rights and obligations of the parties involved.

Until then, carefully evaluate the risks and opportunities of this latest exciting chapter in the industry's ever-evolving history. □

Ryan J. Morgan is the energy transactions practice leader for Steptoe & Johnson PLLC. He is based in Charleston, W.Va. Additional insight from Morgan on cryptocurrency agreements and payments can be found at HartEnergy.com.





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ADDRESSING OIL AND GAS' BAD RAP

Oil and gas will be extremely important to solving the energy transition and management need to get outside their comfort zone to attract today's generation to the sector, says Stephen Arbogast, director of the UNC Kenan-Flagler Energy Center.

INTERVIEW BY
LEN VERMILLION

Editor's note: This is the first in a three-part series *Oil and Gas Investor* is featuring with Kenan-Flagler Energy Center at the University of North Carolina (UNC) at Chapel Hill. Parts two and three will appear in the September and October issues.



Stephen Arbogast, professor of the practice of finance and director of the Kenan-Flagler Energy Center at the University of North Carolina (UNC) at Chapel Hill

The energy transition is changing the way the oil and gas sector needs to look at cultivating its future workforce and, in particular, leaders.

However, even with the transition, any major energy company will need the “traditional workforce” that has made it into what it is today, according to Stephen Arbogast, professor of the practice of finance and director of the Kenan-Flagler Energy Center at the University of North Carolina (UNC) at Chapel Hill.

Still, the energy transition is real, Arbogast said, and it's going to happen. Therefore, a portion of the future energy workforce will need to be able to help oil and gas companies navigate that transition.

In this first part of a three-part series, Arbogast talks about the value of messaging to the next generation of students who will one day become the leaders of the oil and gas industry.

The energy transition is underway. How is it changing the way the energy sector, particularly oil and gas, needs to look at cultivating its future workforce and its future leaders?

The key I think in the question that you asked is the word cultivate. Exactly how is the current management of the energy sector, and in particular oil and gas, going to appeal to the next generation of energy practitioners and develop the leaders in the industry?

Imagine that you're the senior manager of a major oil and gas company in this town, and you take the energy transition seriously. What kind of workforce would you like to have? The first thing that you need is, you still need that traditional workforce, you still need all that literacy and all those engineering skills that have basically made the industry what it is today. So I would say that the first thing is that the leaders of the industry need to continue to robustly assert that.



This is an industry that's going to be here, [and] it's going to be critical to the future of our economies, not just in the United States, but globally. It is not an industry that's going to disappear anytime soon.

Now, the second piece of that is the transition is real, and it's going to happen. So I need a portion of that workforce that is going to help me navigate that transition. The first ingredient that the management needs to convey to today's energy students is we take the transition seriously, and oil and gas companies are going to be a major part of the solution. Now, this is true. The world is going to need the oil and gas companies to be a major part of the solution.

I think the industry has a bit of a credibility issue there because it actually doesn't spend that much money on transition-type investments. So I think the students are looking for those signs that basically say, OK, this isn't just talking, this is actually spending money. So that would be the first thing that they would need to, if you will, cultivate.

After that, there's a couple of other aspects that I think are important. They need to convey to the students that solutions are going to be hybrid. The narrative today, it's all wind, solar and storage. I know it's going to be hopelessly inadequate for accomplishing decarbonization. So the industry has got to come along and basically say, it's going to be other things that are going to be involved, in particular things like carbon capture and the introduction of new types of fuels, potentially including things like hydrogen. So inviting the students to participate and in fact, building new businesses inside the traditional oil and gas industry is going to be an important part of this cultivation.

What are the specific skill sets that energy MBAs will need now that it is different than when we were talking about conventional oil and gas?

It's a really interesting question, and the answers might surprise you a little bit. A big part is going to be the commercialization of new technology. You don't see a lot of that in traditional MBA programs, but I think you're going to need to see it in MBA programs going forward. What do we mean by commercialization? It's like, how do you make a business that makes money around new technology? In the oil and gas industry, technology adoption has been very incremental, but now we're talking about going outside our comfort zone and building new businesses in places where we haven't operated. How are you actually going to make a business that makes money out of carbon capture, for example? I think that's a really interesting question.

Another example, Kinder Morgan [Inc.] had an investor day where they talked about, [for example], what would be the role of their pipelines in the future? Well, they're are talking about are they going to be carrying CO₂? Are they going to be carrying hydrogen? These are interesting sort of questions, and you're going to have to make a business that makes money out of them. So that's a big question that MBA programs are going to have to take up.

Now, there's one other one I want to mention and is nowhere on the radar screen. In what ways is oil and gas a consolidating industry in different markets, and how do you play your hand strategically in a consolidating industry? Do you be an early leaver? Do you want to be the last man standing? You see California; you see both things. You see people that have left early and people that are going to wait it out. The whole strategy around being in a consolidating industry in some markets is another skillset that MBAs are going to bring to the table.

Last one, working with public policy. Very, very different way. Lots of things in the energy transition are going to need sustainable public policy. Traditionally the oil and gas industry has hated to make investments that relied on subsidies or mandates. But now if you're going to build businesses in these new places, you're going to need sustainable public policy. How do you accomplish that? That's going to be a new skillset. You're not going to get that out of engineering schools. You're going to need to find it someplace else.

Could you further expand how Kenan-Flagler the Energy Center at UNC is encompassing the outlook on energy?

We thought that since we're a business school, we ought to focus on how to make money in the energy business. And it's surprising how many energy programs are not actually that interested in that. They're interested in policy advocacy or



the nuts and bolts of the technical side. Let me put it to you this way, we conceive of the energy business as a particular type of commodity business. Now business schools actually don't spend a lot of time on commodity businesses. They are very fascinated by tech businesses, for example. But a commodity business has particular characteristics. Its competition is on the basis of unit costs of production. So we teach the students, whether you are going to go into renewables, whether you were going to go into utilities, whether you're going to go into oil and gas, you better be prepared to compete on the basis of cost leadership and unit cost leadership.

Second, commodity businesses have fragile price structures, and a fragile price structure is a function of the fact that relatively small imbalances in supply and demand can produce outsized price effects. So you have this big price cycle in the oil and gas industry. How do you navigate through an industry that has these tremendous ups and downs? How do you navigate financially and strategically through that business? We spend a lot of time on that kind of question. So you can see that the business of energy has distinctive characteristics that don't get a lot of attention elsewhere.

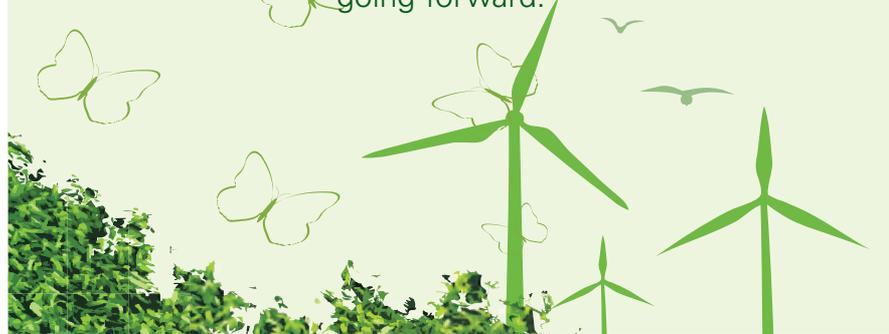
Third thing, energy is the most strategic industry in the world. As a result, it traps a tremendous amount of public policy attention. So the third leg of the stool is OK, you're in a commodity business, unit cost of production, volatile price structure and tremendous amount of government intervention. That's how we teach the business of energy.

Teaching is a little bit different when it comes to energy markets. What's different about students coming in today? What is their take on oil and gas?

That's a really interesting subject, and it doesn't do us a lot of favors to kind of avoid an unhappy truth, which is there's a stigma on the oil and gas industry now. A lot of the students that come in, they walk through the door and they basically say, 'I'm interested in renewable energy.' I get that from students that have actually worked in oil and gas, [and] I get it from students that come out of the military. It's not just the people that have been in Northeast liberal arts programs that have those kinds of attitudes.

The first thing that we have to deal with in this is, what has led you to that conclusion, and what are you not looking at in terms of other factors? What's surprising to me is that today's generation of students are not paying a lot of attention to very big issues that are very contemporary, which have kind of receded off the radar screen. Inflation, development, prosperity in the developing world, energy security, energy geopolitics. There's been a tremendous loss of interest in all of those things because they've grown up in a period of time where basically those problems haven't seemed to be that pressing. They're still there, and they can come back, as Texas saw, in spades just a couple of months.

"A big part is going to be the commercialization of new technology. You don't see a lot of that in traditional MBA programs, but I think you're going to need to see it in MBA programs going forward."



Does that make it harder to find students? What are the prospects of students who want to get into energy these days?

The good news is that although they come through the door deeply devoted to renewables, they're educable. We show them these other issues, and we show them the reasons why oil and gas has been so fundamental. And we talk to them about ways in which the oil and gas industry is going to be extremely important to solving the energy transition.

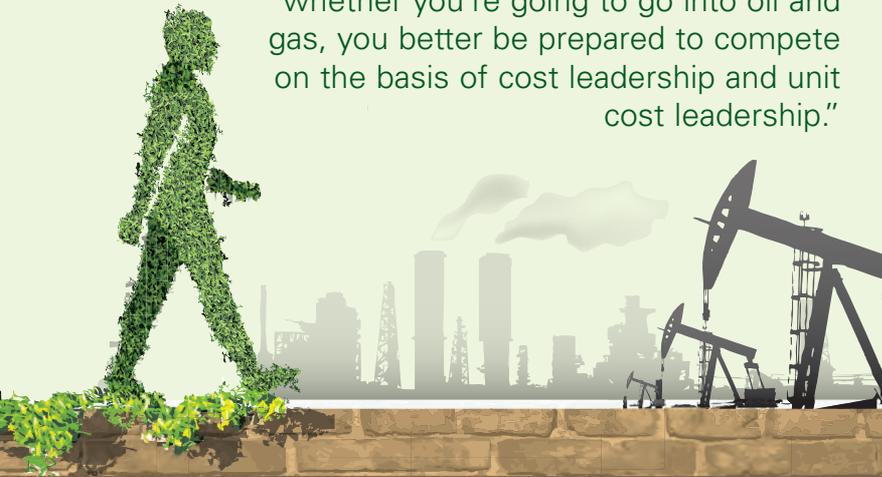
Let give you one example of that. Interestingly enough, a lot of the press in the United States focuses only on decarbonization in the United States. But decarbonization is a global problem. So we make a point to the students: Guess what, it doesn't accomplish a lot to decarbonize the United States if Asia and the developing world are increasing their carbon footprint, which they are and are dramatically. So we put the question to them. How are you going to decarbonize China and India when they're adding coal plants all the time?

Surprisingly enough, they quickly discover that LNG is one of the big reasons and one of the big ways you can decarbonize out there. Then they find the surprising conclusion that the way to keep LNG viable for substitution in Asia it has to be affordable, which means that fracking, which has kept natural gas relatively cheap and LNG affordable, becomes important to decarbonization. So it's points like this that I think help make a much more nuanced outlook for our students when they leave at the end of two years.

I think they would look at oil and gas less as an obstacle than they previously did when they came in. Is that true?

Well, absolutely. We also challenge this idea that wind and solar can decarbonize. If they're going to have real limits, you're actually going to need another pathway. How much sense does it make to tear down everything you have and substitute it with things that are less efficient?

"We teach the students, whether you are going to go into renewables, whether you were going to go into utilities, whether you're going to go into oil and gas, you better be prepared to compete on the basis of cost leadership and unit cost leadership."



So obviously, there's the second pathway, which is to decarbonize the energy infrastructure you already have. You're going to need the oil and gas industry to do that.

We talked a lot about what has changed with an MBA program, but at the end of the day, it's still about making money, as you said. So what is the same? What has not changed?

The first thing, if you want to sort of say what's not changed in MBA program, technical literacy still matters. And so, we talk to our students a lot about the fact that if you're going to be effective in an industry that is deeply embedded and based on engineering, you have to be technically literate in the aspects of the industry that are going to continue. To illustrate this, one example we use is, you're not going to have to know how to operate [equipment], but you're going to have to know what goes in, what goes out and how to value it in order to have that conversation with the engineers. And that's true whether you're talking about exploration and production or midstream or refining or petrochemical. So the technical piece is still going to be there.

The second thing is energy finance and economics. You have to be grounded in those things, but this is where things are going to change a little bit. If you're doing a traditional capital project in the energy industry, basically, it's what you call marginal economics. You look at what are the changes from the base case. But in the future, a lot of projects in the oil and gas industry are also going to be defending the base business. They're going to have to pioneer, if you will, economics, or take those kinds of things into effect.

What are the characteristics of this program that make it unique but also one of the top energy MBA programs out there?

There's a couple of characteristics that you

really won't find in other energy MBA programs. The biggest is, it's a full value chain program. If you look at programs at places like Duke or a Ross, or even a place like University of Texas [UT], they tend to focus on one part of the value chain. It might be oil and gas at UT, it might be renewables at Duke. We do the whole value chain—oil and gas exploration and production through the midstream, refining petrochemicals, business of power and renewables. So it's all there. We tell the students, look, you have to understand the full value chain because whether you care about renewables, oil and gas, you're going to compete with the other sectors, and you're going to cooperate with the other sectors. So you need to know the whole piece.

The other thing that's really distinctive about our program is taught entirely by practitioner faculty. Everybody, the teachers in the program has been in the industry, or is still in the industry, for 20 years. For example, Dan Domeracki was at Schlumberger [Inc.] for 40 years, [and] teaches the business of oil and gas exploration and production. Energy tax is taught by the current tax counsel at Kinder Morgan [Inc.]. And the business of renewables is taught by president of Duke Energy Renewables. So, you get exposure to people that have actually been there and done it, and they write case studies about what they learned in their industry.

What kind of response do you get from people in the industry to come in and teach? This is not a case of [someone] coming to give a lecture and then leave, right?

No. It takes us about a year to prepare an industry person who wants to come and teach in our program. They have to develop a detailed syllabus. We take them through a curriculum committee. They have to write three to five case studies as part of doing this. Industry people who haven't been in the classroom, point of fact, they have to actually learn what's required to deliver a course there and have material worth a top MBA program.

When we talk about the full value chain in the program, why is that important to have a program like that?

So let's say you're interested in renewables. What's setting the return in renewable energy these days? It's the price of natural gas. Now, let's say you're at the other end of the spectrum and you're interested in oil and gas exploration and production. Well, in point of fact, one of the big questions there is, how long are your reserves going to be, if you will, allow to be commercialized? What's your reserve life? That's going to depend on the aggressiveness and adoption of alternative energy at the other end of the spectrum.

So, if you're going to present to your management and say, 'Hey, let's do this project, we got 40 years of reserves.' Well, do you? So, you really need to understand everything that's coming on across the value chain to make judgments in this specific sector. □

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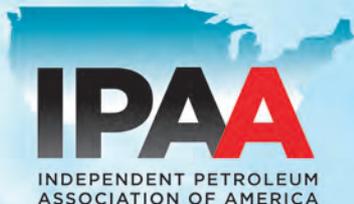
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Chevron, Shell Consider Permian Exits Worth Billions

CHEVRON CORP. AND Royal Dutch Shell Plc are said to be considering sales of all or some of their assets in the Permian Basin, sources told Reuters.

Chevron is considering a sale of two collections of conventional oil and gas fields in the Permian Basin valued at more than \$1 billion combined, three sources told Reuters.

Royal Dutch Shell Plc is also said to be considering exiting the Permian Basin amid pressure to accelerate its energy transition strategy and deepen carbon emission cuts.

U.S. oil futures have soared more than 50% so far this year, prompting companies to try to sell assets in Permian Basin of Texas and New Mexico, the country's largest oil field. Chevron is looking to sell lower-value assets, while Shell is considering a full withdrawal from the formation.

Chevron appears motivated by wanting to invest only in the highest performing assets. The company has been evaluating other assets in the Permian and elsewhere, one of the people said, and could divest older assets over the year as it looks to boost investments in energy transition.

Together, the assets Chevron is marketing could fetch as much as \$1.2 billion, based upon the strength of oil futures, according to one of the people.

Chevron has retained an investment bank to market some Permian oil and gas fields valued at \$879 million and has additional assets of more than \$200 million available for sale elsewhere in the basin, the sources said.

Initial bid proposals were planned for June 10, with a planned July 1 sale date for the larger package. The assets are operated by Chevron and **Occidental Petroleum Corp.** and span

57,000 net acres with production of about 10,100 boe/d.

The company did not immediately respond to the requests for comments.

Last month, a landmark Dutch court ruling ordered Shell to speed up its plans to cut greenhouse-gas emissions despite plans outlined earlier this year to become a net-zero carbon emissions company by 2050.

Shell's Permian Basin position could be worth over \$10 billion, according to the sources in the Reuter report. The sources added that the sale could be for all or a portion of Shell's assets and that there was no guarantee a deal would be struck.

According to **Enverus**, the holdings cover 240,000 net acres on the Texas side of the Delaware Basin in the Permian and delivered 2020 net production of 197,000 boe/d, off 23% from 2019 and equivalent to 6% of Shell's total.

—Darrin Barbree

ConocoPhillips Boosts Buybacks By \$1 Billion On Savings From Concho Deal

CONOCOPHILLIPS CO. on June 30 raised its share buy-back plans by \$1 billion citing increased savings from its multibillion-dollar acquisition of Permian Basin operator **Concho Resources Inc.**

Alongside the news, ConocoPhillips, the top U.S. independent producer, outlined details of an operating and financial plan reflecting numerous transformational activities as part of a market update.

"We believe we're entering a constructive environment for the business, but we also recognize that we're in a period of evolving energy transition," CEO Ryan Lance said in a company release. "ConocoPhillips is meeting this moment with a very compelling plan that is resilient and durable, but also flexible."

The newly launched plan, which Lance said the company is calling the "Triple Mandate," is another step forward from



Source: ConocoPhillips Co.

the disciplined, returns-focused strategy it launched in 2016 that included returning 30% of cash from operations to shareholders.

"We want to play a valued role in whatever pathway the energy transition takes by investing in the lowest cost of supply barrels, delivering competitive returns of and on capital, and achieving our net-zero emissions ambition," he said.

ConocoPhillips on June 30 announced plans to trim its spending plans. The company also now expects to rake in about \$1 billion annually of savings from its purchase of Concho—double the \$500 million in synergies it had forecast when the deal was announced last October.

"We can and will adapt as the future plays out, all while remaining focused on delivering superior returns to shareholders through cycles," Lance continued.

"We don't believe any other company in our E&P sector offers a more investable plan for this vital business," he added.

The Houston-based company had resumed its share repurchase program of \$1.5 billion in March. The increase announced June 30 will bring the company's total planned distributions for the year to about \$6 billion.

—Hart Energy Staff

Patterson-UTI To Buy Pioneer Energy Services For \$295 Million

PATTERSON-UTI ENERGY INC. agreed to acquire **Pioneer Energy Services Corp.** for approximately \$295 million in a cash-and-stock deal, which includes the retirement of all Pioneer Energy Services' debt.

San Antonio-based Pioneer Energy Services is a contract driller that also provides a number of well and production services.

Last year, the company voluntarily filed for Chapter 11 bankruptcy and completed a debt restructuring process. Shortly after emerging from bankruptcy in June 2020, Wm. Stacy Locke, who had served as president and CEO since December 2003, decided to step down. At the time, Matt Porter, founding partner at consulting firm **Activos LLC** and investment firm **Allied Industrial Partners**, had been named as interim CEO.

Patterson-UTI CEO Andy Hendricks described the acquisition of Pioneer's fleet of 17 drilling rigs in the U.S., of which 16 are super-spec, as a "valuable addition" to Patterson-UTI's current fleet of 150 super-spec drilling rigs in the U.S.

"Additionally, many of these rigs are capable of substituting cleaner-burning natural gas for diesel, a technology that is becoming increasingly important to operators for reduced emissions," commented Hendricks in a company release. "Following the closing of this transaction, Patterson-UTI will own 166 super-spec rigs in the United States, with almost half of these rigs equipped to utilize alternative power sources for reduced emissions."

Hendricks also noted the expansion of Patterson-UTI's geographic footprint into international markets with the addition of eight rigs in Colombia, where Pioneer has worked for 14 years.

In addition to the U.S. and Colombian contract drilling businesses, the deal includes Pioneer Energy Services' well service rig business consisting of 123 service rigs with a leadership position in the Gulf Coast region, which Patterson-UTI expects to divest following the closing of the transaction.

"Patterson-UTI believes this business would be better served as part of a larger well service rig business or as a focused standalone business," the company said in the release.

Patterson-UTI expects the acquisition of Pioneer Energy Services to generate annual synergies of more than \$15 million plus be accretive to cash flow per share and adjusted EBITDA per share.



The transaction values Pioneer Energy Services on a cash and debt free basis at approximately \$295 million, assuming the issuance of roughly 26.3 million shares of Patterson-UTI common stock at the closing price of \$10.14 on July 2, plus \$30 million of cash.

All Pioneer Energy Services debt is being retired in the transaction with a portion of such shares and cash and with Pioneer Energy Services' cash on hand determined in accordance with the acquisition agreement prior to closing.

Following its debt restructuring completed through a Chapter 11 reorganization in June 2020, Pioneer held \$208 million of new debt consisting of \$78 million of floating rate senior secured notes due May 2025, with 50% of the interest in the first year paid in-kind rather than in cash, and \$130 million of 5% convertible notes

due November 2025, with all interest paid in-kind rather than in cash.

Upon conversion of the convertible notes, and assuming the company does not incur additional debt, Pioneer would have \$82.4 million of debt outstanding, which includes paid in-kind interest, according to a company release.

The transaction is expected to close fourth-quarter 2021, subject to regulatory approvals, customary closing conditions and the approval of Pioneer Energy Services' stockholders.

Gibson, Dunn & Crutcher LLP is serving as legal counsel to Patterson-UTI. Pioneer Energy Services is receiving legal counsel from **Vinson & Elkins LLP**, **Simmons Energy**, a division of **Piper Sandler** and **Tudor, Pickering, Holt & Co.** are the company's financial advisers.

—Emily Patsy

Eagle Ford Producers Penn Virginia, Lonestar To Combine In \$370 Million Deal

PENN VIRGINIA CORP. agreed to acquire **Lonestar Resources US Inc.** in an all-stock transaction valued at about \$370 million, which Penn Virginia president and CEO Darrin Henke said will expand the Houston-based company's Eagle Ford Shale footprint.

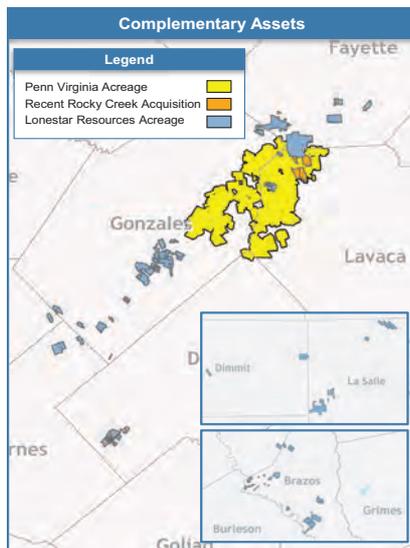
"This transaction further solidifies the company's position as a premier Eagle Ford operator and provides additional scale and synergies while still delivering operational excellence," Henke said in a July 12 company release.

"The benefits of basin consolidation are very compelling, and we strongly believe this is a value-creating opportunity for both companies," Henke also said in his statement.

As of March 31, Lonestar, an independent E&P based in Fort Worth, Texas, held approximately 72,682 gross (53,550 net) acres in the crude oil and condensate windows of the Eagle Ford Shale. Penn Virginia expects the acquisition of Lonestar to increase its inventory locations by 50% to 750 gross locations, according to its release.

Also, in addition to expected annual synergies of over \$20 million, Penn Virginia said the acquisition improves projected 2021 free cash flow per share by approximately 30%. The company also expects the additional scale to allow for further potential consolidation opportunities.

"In today's environment, size and scale are paramount, both in terms of operations and in the public markets," added Lonestar CEO Frank D. Bracken III in the release. "The merger exposes Lonestar shareholders to a substantially larger, more liquid, publicly-listed platform and the combination of the two companies' high-quality,



Source: Penn Virginia Corp.

liquids-focused operations should provide significant benefit to both shareholder groups, positioning the company as a dominant force in the Eagle Ford Shale."

Under the terms of the merger agreement, Lonestar shareholders will receive 0.51 shares of Penn Virginia for each Lonestar share. Upon completion, Penn Virginia shareholders will own approximately 87% of the combined company, with Lonestar owning the remaining 13%.

The Lonestar acquisition follows the closing of a strategic investment in Penn Virginia by **Juniper Capital Advisors LP** earlier this year. The investment included \$188.4 million consisting of \$150 million in cash, plus the contribution of assets from its portfolio company, **Rocky Creek Resources**.

Commenting on the Lonestar acquisi-

tion, Edward Geiser, managing partner of Juniper Capital who joined the Penn Virginia board as chairman as part of the investment, said, "This is exactly the type of accretive Eagle Ford consolidation we have been targeting and creates a significant opportunity for investors."

"Penn Virginia and Lonestar fit well strategically," he continued, "and the combined company will be stronger across key financial metrics, will operate more efficiently than each company standalone, and will continue Penn Virginia's commitment to environmental and social stewardship."

In his statement, Geiser also noted that the Lonestar team will be actively screening for additional attractive consolidation opportunities going forward.

The Lonestar transaction value is comprised of about 5.9 million shares of Penn Virginia common stock and the assumption of approximately \$236 million of net debt.

The closing of the transaction is expected in the second half of 2021 and is subject to customary closing conditions, including the approval of Penn Virginia and Lonestar shareholders.

Following the closing, Lonestar will have the right to nominate one independent director to the Penn Virginia board of directors.

Evercore, BofA Securities, and RBC Capital Markets LLC are financial advisers to Penn Virginia. **Kirkland & Ellis LLP** is Penn Virginia's legal adviser. **Barclays Capital** is financial adviser to Lonestar. **Vinson & Elkins LLP** is Lonestar's legal adviser.

—Emily Patsy

Private Eagle Ford Producer Recoil Resources Seeks Buyer

PRIVATELY OWNED OIL driller **Recoil Resources** is scouting for a buyer for its assets spread across 71,000 acres in the Eagle Ford Shale play of South Texas, according to two sources familiar with the matter.

The assets, expected to produce around 4,000 boe/d in July per Recoil's marketing materials seen by Reuters, could fetch over \$200 million in a sale, one of the sources said.

A sale could be finalized over the coming months, one of the sources said, requesting anonymity as the talks are confidential.

Recoil did not immediately respond to a Reuters request for comment.

Backers of private oil producers across North America have been looking to capitalize on a recent run-up in crude prices, buoyed by economies reopening as vaccinations gather pace. U.S. crude was trading around \$74/bbl on June 30, up 51% from the end of last year.

In the Eagle Ford region, which neighbors the prolific Permian Basin, multiple companies are currently pursuing divestitures, according to multiple people involved in the bidding processes.

"We haven't seen a ton of announced

EF (Eagle Ford) deals yet but expect to see activity pick up given the number of processes being run in the play," said Andrew Dittmar, senior M&A analyst at **Enverus**.

"As one of the most developed shale plays with substantial existing production, the Eagle Ford stands to particularly benefit from rising commodity prices both for oil and gas production."

EP Energy, another Eagle Ford focused driller, has attracted interest from multiple private equity firms for its assets in the region, Reuters reported in July.

—Darrin Barbee

Wildfire Energy Enters Eagle Ford Through Hawkwood Energy Acquisition

HAWKWOOD ENERGY LLC agreed to be acquired by **WildFire Energy I LLC** in a transaction that the Denver-based private Eagle Ford operator said values it at approximately \$650 million.

Founded in 2012 with a line-of-equity commitment from lead investors **Warburg Pincus** and **Ontario Teachers' Pension Plan**, Hawkwood has since accumulated over 160,000 net acres in the Eagle Ford Shale play in East Texas. The company was ranked by *Oil and Gas Investor* as a top 100 private E&P and the No. 3 private operator in the Eagle Ford play in terms of production.

"We are proud of what Hawkwood has accomplished since entering the Eagle Ford and believe that joining with WildFire is the next logical step in our evolution," said Hawkwood CEO Jim Addison in a company release on July 8.

Hawkwood's operations include over 375 operated wells producing more than 19,000 net boe/d (85% oil). A majority of its leasehold in East Texas is in Brazos and

Burleson counties with additional acreage in Leon, Madison and Robertson counties.

The terms of its transaction with WildFire weren't disclosed. However, as part of the agreement, Hawkwood's existing shareholders will retain a roughly 50% equity interest in the combined company. Further, the company release noted that the transaction attributes an enterprise valuation to Hawkwood of approximately \$650 million.

The combined entity will retain the WildFire Energy name and be operated by the WildFire management team post-closing, set for the third quarter.

According to the release, WildFire's management team, led by CEO Anthony Bahr who formerly served as president of **WildHorse Resources Development**, has extensive experience in the Eagle Ford having previously managed WildHorse until its sale to **Chesapeake Energy Corp.** in 2019 for nearly \$4 billion.

WildFire was formed in 2019 with funding from Warburg Pincus, **Kayne**

Anderson and management to pursue production-weighted oil and gas assets in onshore U.S. basins, seeking to efficiently optimize and develop reserves using modern technologies and its extensive operating experience.

WildFire's management team and private equity sponsor Kayne Anderson, which provided a "significant equity investment" for the transaction, will control the remaining 50% in the combined company.

In a statement commenting on the transaction, Mark Teshoian, managing partner at Kayne Anderson, said: "Enabled by its strong balance sheet, WildFire will actively pursue attractive risk/reward opportunities both through the drill bit and via accretive acquisitions."

"We look forward to continuing our partnership with the WildFire team as they enter this next stage," he added.

In addition to Bahr as CEO, WildFire's remaining management team includes former WildHorse COO Steve Habachy and the company's former CFO, Drew Cozby.

—Emily Patsy



The logo for zdSCADA features a stylized white 'z' with a curved line above it, followed by the letters 'dSCADA' in a bold, sans-serif font. A registered trademark symbol (®) is located at the end of the word 'SCADA'.

Plains All American, Oryx Midstream To Merge Permian Basin Assets

PLAINS ALL AMERICAN Pipeline LP agreed to merge a vast majority of its Permian Basin assets with privately held **Oryx Midstream Holdings LLC**, the companies said in a joint release on July 13.

The merger, structured as a cashless transaction, will create a debt-free joint venture (JV) named **Plains Oryx Permian Basin LLC** that the companies expect will generate \$50 million of operational synergies within the first 12 months and potentially reach over \$100 million over time.

Since its launch in 2013, Oryx Midstream, a portfolio company of **Stonepeak Infrastructure Partners** based in Midland, Texas, has grown into one of the largest privately held midstream crude operators in the Permian Basin. According to CEO Brett Wiggs, its combination with Plains is a “natural evolution of the Oryx growth story.”

“We look forward to partnering with Plains and are confident that Plains Oryx Permian Basin will continue to grow and provide producers with the best solutions

in the region,” Wiggs commented in the joint release.

In 2019, Stonepeak purchased substantially all of the assets of Oryx Midstream for roughly \$3.6 billion in cash from its investors, which included affiliates of **Quantum Energy Partners**, **Post Oak Energy Capital**, **Concho Resources Inc.** and **WPX Energy Inc.** Later that year, **Qatar Investment Authority** announced an additional investment of approximately \$550 million through the acquisition of “a significant stake” in Oryx.

Pro forma, the Plains Oryx Permian Basin JV will be comprised of 6.8 MMbbl/d of crude pipeline capacity spanning 5,500 miles with an average remaining contractual life of about seven years on the JV’s 4.1 million dedicated acres.

The JV will be owned 65% Plains and 35% Oryx with exact cash split determined by a tiered 10-year modified distribution sharing agreement. Plains has retained ownership and the JV will be consolidated into its financial statements. However, the release noted a joint operating committee

that includes representatives from Plains and Oryx will provide oversight on material JV operating and commercial decisions.

Excluding synergies, the JV is forecasted to contribute \$800 million of EBITDA and \$625 million of free cash flow for 2021, according to an investor presentation by Plains.

The transactions are expected to close in fourth-quarter 2021. The agreement also includes the refinancing by Oryx of existing debt with a new term loan B secured by its equity interests in the debt-free JV.

J.P. Morgan Securities LLC served as Plains’ exclusive financial adviser for the transaction and **Vinson & Elkins LLP** provided the company legal counsel. **Simmons Energy**, a division of **Piper Sandler**, served as Oryx’s lead financial adviser. **Barclays** also served as a financial adviser to Oryx and is leading a committed term loan B refinancing. **Sidley Austin LLP**, led by two Houston partners Tim Chandler and Tommer Yoked, represented Stonepeak Infrastructure Partners and its portfolio company, Oryx, in the transaction.

—Emily Patsy

Oasis Petroleum Completes Permian Basin Exit In Sale To Percussion II

PERCUSSION PETROLEUM Operating II LLC acquired **Oasis Petroleum Inc.**’s remaining upstream assets in the Texas region of the Permian Basin for cash consideration of up to \$375 million, according to regulatory filings.

The team behind private equity-backed Percussion Petroleum have returned to the Permian Basin—this time in the core of the Delaware Basin.

In a recent company filing by Oasis Petroleum, Percussion Petroleum Operating II acquired Oasis’ remaining upstream assets in the Texas region of the Permian Basin for cash consideration of up to \$375 million. The transaction completes Oasis’ exit from the Permian Basin through the divestiture of its position located in the core of the Delaware Basin in Loving, Ward and Winkler counties, Texas.

Percussion II is a Houston-based oil and gas company funded through an equity commitment from **Carnelian Energy Capital** announced in March 2020. The company’s founders, John Campbell III and Brian Zwart, previously had success in the Permian Basin through its predecessor company,

Percussion Petroleum LLC, which was also partnered with Carnelian.

Percussion I assembled a 22,000 net-acre position in the Northwest Shelf of the Permian Basin, including interests in approximately 380 gross producing wells plus associated water and midstream assets. The company ultimately eventually sold the entire position situated in the core of the Yeso Formation in New Mexico’s Eddy and Lea counties to **Spur Energy Partners LLC** in mid-2019.

In the acquisition from Oasis Petroleum, Percussion II acquired approximately 24,000 net acres containing net proved reserves at year-end 2020 of approximately 30.3 MMboe. During first-quarter 2021, the assets produced approximately 7,186 boe/d on a two-stream basis of crude oil and natural gas, according to a filing by Oasis with the U.S. Securities and Exchange Commission (SEC) on July 6.

Oasis entered the Permian Basin in 2017 with the acquisition of **Forge Energy** for a mix of cash and stock equivalent worth approximately \$946 million. However, since then, the company underwent

a financial restructuring and appointed a new CEO before ultimately deciding to double down on the Williston Basin with the acquisition in early May of **Diamondback Energy Inc.**’s Bakken Shale asset.

The acquisition was soon followed by the sale of Oasis Petroleum’s position in the Permian Basin, announced in late May through three separate transactions expected to generate total proceeds of \$481 million including through contingency payments tied to future oil prices.

In the May release, Oasis CEO Danny Brown explained the company’s decision to exit its Permian position was due to limited opportunities to grow in the prolific oil and gas region unlike the Williston Basin.

“The decision to exit the Permian Basin while building scale in the Williston Basin is fundamentally based on aligning company resources with our core competitive strengths and strategic focus of building a sustainable enterprise which generates significant free cash flow for the benefit of the company and shareholders,” Brown said the company release on May 20.

—Emily Patsy

TRANSACTION HIGHLIGHTS

WYOMING

■ **Williams** finalized an upstream joint venture (JV) in Wyoming's Greater Green River Basin the Tulsa, Okla.-based midstream company said July 6 will enhance the value of its natural gas and NGL infrastructure in Wamsutter Field.

"Today's announcement is the culmination of Williams' consolidation efforts in the Wamsutter Field," commented Chad Zamarin, senior vice president of corporate strategic development for Williams, in a company release.

The JV consolidates three legacy **BP Plc** and **Southland** upstream assets with **Crowheart Energy's** asset base into one contiguous footprint consisting of over 1.2 million net acres, which Crowheart will operate as part of the JV agreement.

"With Crowheart as our operating partner, we position the upstream platform with a proven in-basin operator who is committed to optimizing and developing the consolidated assets," Zamarin continued in the release.

Crowheart Energy is a Denver-based upstream oil and gas company focused on horizontal development of operated assets in Wyoming's Greater Green River Basin. The company was founded in 2017 in partnership with **The Madava Group**.

The JV agreement with Williams will add over 3,500 operating wells and more than 3,000 potential development locations to Crowheart's position in Wamsutter Field, which covers Sweetwater and Carbon counties in Wyoming.

VACA MUERTA

■ **Vista Oil & Gas SAB de CV** recently announced several agreements with commodities trading firm **Trafigura**, which the independent producer hopes will accelerate its development in Argentina's Vaca Muerta Shale.

In a company release on June 28, Vista said it had established an un-incorporated joint venture (JV) and entered into an investment agreement with **Trafigura Argentina SA** for the joint development of the Bajada del Palo Oeste concession. The companies also entered into a crude oil marketing agreement.

"We believe this transaction will help Vista accelerate its development in Bajada del Palo Oeste, contribute toward the supply of Trafigura's refinery and generate incremental crude oil volumes for export," the company said in a release.

Bajada del Palo Oeste is Vista's main shale oil development in Vaca Muerta. Field development began in the second half of 2018 and there are currently 28 wells on production. The company has identified approximately 550 new well locations in Bajada del Palo Oeste.

Under the terms of the JV agreement, the companies will jointly develop initially five pads of four wells each in Bajada del Palo Oeste.

MIDSTREAM

■ **DT Midstream** completed its spinoff from **DTE Energy** on July 1, emerging as the "only independent, mid-cap, C corp, gas-focused midstream company" with assets in the Marcellus/Utica and Haynesville shales.

"This is a historic day for DTM as we begin our journey as a premier, independent midstream company," commented DT Midstream president and CEO David Slater in a release by the Detroit-based company on July 1.

DTE Energy, a diversified energy company, previously announced its intent to spin off its DTE Midstream business last October as part of a plan to transform itself into a predominantly pure-play regulated electric and natural gas utility. Under the separation plan, DTE Energy shareholders were expected to retain their current shares of DTE Energy stock and receive a pro-rata dividend of shares of the new Midstream company stock in the spinoff transaction.

Shares of DT Midstream are set to begin trading on the New York Stock Exchange under the symbol "DTM" following the successful completion of the separation from DTE Energy on July 1.

SERVICE & SUPPLY

■ **Baker Hughes Co.** is investing in a startup focused on the production of natural gas from hydrogen and CO₂, known as synthetic natural gas (SNG), marking the company's latest move in the energy transition space.

As part of the investment, Baker Hughes will acquire a 15% stake in the startup, **Electrochaea GmbH**, which the company said will enhance its broader carbon capture and utilization (CCU) portfolio. Financial terms of the transaction weren't disclosed.

"This agreement is another deliberate step in our strategy to position Baker Hughes for new energy frontiers like CCU by investing in emerging technologies and combining them with our own proven

capabilities," commented Rod Christie, executive vice president of turbomachinery and process solutions at Baker Hughes, in a company release on June 28.

In recent years, Baker Hughes, one of the world's largest oilfield service providers, has positioned itself as an energy technology company in a push to lead the energy transition. The strategic shift has included bolstering its portfolio offering of carbon capture and other decarbonization technologies, similar to its investment in Electrochaea.

Headquartered in Germany, Electrochaea is developing novel proprietary bio-methanation technology to produce SNG from green hydrogen and CO₂, which, according to the company release, can come from a variety of sources, such as biogas, fermentation off-gas or captured from single-point emitters such as power and industrial plants. In turn, SNG can be used for low-carbon heating, transport and industrial applications. In addition, once SNG is injected into existing natural gas pipelines, it can be used as a form of energy storage, the company release said.

Along with the lead investor Baker Hughes, the existing investors **MVP**, **Storengy** (an **ENGIE** subsidiary), **KfW**, **Caliza**, **Focus First**, **Energie 360°** and **btov** also participated in Electrochaea's latest financing round. As part of its investment, Baker Hughes will also assume a seat on Electrochaea's board of directors.

NORTH SEA

■ **Royal Dutch Shell Plc** said on June 25 it had agreed to acquire **BP Plc's** 27.5% stake in the Shearwater North Sea gas field, raising its stake in the field to 55.5%.

Shell, which operates the Shearwater hub, exercised its right of first refusal to the stake after BP agreed last month to sell its stake to **Tailwind**, a private oil producer backed by commodity trader Mercuria.

"This is part of a multiyear strategy, following a number of earlier growth projects, to strengthen Shearwater's role as an important gas hub for U.K. energy supply," a Shell spokesperson said.

"The move reflects Shell's strategy of focusing our upstream activities on fewer, existing positions to generate material returns for shareholders and to fund the growth of our new low-carbon portfolio."

BP did not respond to a request for comment.

TRANSACTION HIGHLIGHTS

SERVICE & SUPPLY

■ Oil billionaires Dan and Farris Wilks have taken around a 10% stake in hydraulic fracking firm **U.S. Well Services**, according to a regulatory filing, bringing their total investment to \$47.5 million in the past month.

The Wilks family office purchased \$25 million of notes convertible into common shares in late June, worth some 25.7 million shares, according to a filing with the U.S. Securities and Exchange Commission.

Around that same time, the Wilks brothers' pressure pumping firm, **ProFrac**, separately invested around \$22.5 million in U.S. Well Services as part of a licensing agreement that allows them to build and operate electric frac fleets.

ProFrac converted those notes into three licenses, valued at \$7.5 million each, following the transaction close. It has the option to purchase seven additional licenses at \$7.5 million each, and 10 more at \$9 million each.

"We believe these investments not only demonstrate the value of our intellectual property, but also offer further evidence that our industry is rapidly transitioning towards next-generation fracturing technology, led by electric fleets," a spokesperson for U.S. Well Services said in a news release.

Dan Wilks has been scooping up shares in oilfield services firms hard hit by the downturn in drilling and fracking, including stakes in **ProPetro Holding Corp.** and **NexTier Oilfield Solutions**.

The Wilks brothers also have been engaged in lengthy court battles seeking to take over Canadian pressure pumper Calfrac Well Services Ltd.

HAYNESVILLE

■ **Mesa Royalties II LLC** on July 8 closed on the acquisition of a mineral and royalty portfolio in the Haynesville Shale, marking the Houston company's first acquisition since its launch with new financial backer **NGP**.

Mesa II announced its launch in May, raising \$150 million of aggregate equity commitments from NGP through **NGP Natural Resources XII LP** and **NGP Royalty Partners LP**. Previously, the company's predecessor, backed by **Quantum Energy Partners**, had assembled a Haynesville Shale-focused royalty portfolio, which it sold for \$135 million late last year to **Franco-Nevada**.

The portfolio acquired by Mesa II on July 8 consists of about 15,000 net royalty acres and is located in the core of the

Haynesville in North Louisiana, according to Darin Zanoivch, president and CEO of Mesa II.

The acquired asset contains 472 existing PDP wells, and the projected asset cash flow for the next 12 months is about \$30 million. Currently, nine rigs drilling are operating on the acreage today, according to Zanoivch's statement. Terms of the transaction, as well as the seller, were not disclosed.

WYOMING

■ **Contango Oil & Gas Co.** agreed on July 8 to acquire **ConocoPhillips Co.**'s Wind River Basin asset in Wyoming in a \$67 million cash deal.

For ConocoPhillips, the transaction fits into its plan to divest up to \$10 billion of noncore assets over the next two years following its multibillion-dollar purchase of **Concho Resources Inc.** Meanwhile, the deal for Contango follows a merger agreement last month with **Independence Energy LLC**, built and managed by **KKR's** Energy Real Assets team, to become KKR's primary platform for pursuing upstream oil and gas opportunities.

"Our previously announced merger with Independence was designed to accelerate our acquisition pace rather than slow it down, and this transaction is a perfect example of that," said Contango CEO Wilkie S. Colyer in a July 8 company release.

Prior to its merger agreement with Independence, Contango had set out to become a consolidator of conventional, low decline oil and gas assets in the U.S., which the ConocoPhillips assets fit into, Colyer noted.

"This is a huge, conventional gas field with low decline, purchased at an attractive valuation," he said.

EAGLE FORD

■ U.S. oil producer **Mesquite Energy**, which emerged from a contentious bankruptcy last year, is considering a sale of its Catarina Ranch assets in the Eagle Ford region of South Texas, according to three people familiar with the matter.

Divestiture of the assets, spread over 100,000 acres according to Mesquite's filings, could be a prelude to a sale of the company, one of the people said.

The company, known as **Sanchez Energy** before its bankruptcy filing, is yet to begin marketing Catarina Ranch, and it could take another month or more to kick-start the process, one of the people said.

Several oil producers have exited the Eagle Ford region to concentrate on the neighboring Permian Basin as they focus on the most profitable locations.

Ovintiv Inc. said in March it would sell its Eagle Ford assets to **Validus Energy** for \$880 million, while Reuters reported that privately owned EP Energy is in talks to sell its assets. **Chesapeake Energy Corp.** has also considered a sale of its holdings in the region.

Mesquite could still decide to retain the Catarina Ranch assets and no final decision has been made, the people cautioned, requesting anonymity while discussing confidential talks. The Houston-based company, which has over 400,000 gross acres in South Texas, did not respond to Reuters'.

CANADA

■ **Surge Energy Inc.** agreed to acquire **Astra Oil Corp.**, which the company said represents an "exciting reentry" into southeast Saskatchewan for the Surge team.

The Astra acquisition will be funded through the issuance of Surge common shares and the assumption of approximately CA\$15 million of net debt for total consideration of roughly CA\$160 million. The assets include more than 4,100 boe/d (90% liquids) of operated, light oil production with an operating netback of more than \$42 per boe at US\$65 WTI pricing.

Surge had previously exited the region through the sale of its southeast Saskatchewan and Manitoba assets in 2015 to **Torc Oil & Gas Ltd.** for CA\$430 million. However, according to the June 22 release, the company's management strategically targeted its reentry of the region based on its high light oil netbacks, low-cost production efficiencies and quick drilling payouts.

"Surge's operational track record of execution in southeast Saskatchewan, combined with proven in-house technical expertise, positions the company for both organic and acquisitive growth in this new core area," the company said in the release.

The transaction will result in a high-quality, well-positioned 20,200 boe/d (85% oil and liquids weighted), light and medium gravity, intermediate public oil company with two core growth areas in the Western Canadian Sedimentary Basin: Surge's dominant position in the medium gravity Sparky crude oil play and Astra's southeast Saskatchewan light oil assets.

PERMITS

Texas led the way with 505 new permits, and 308 of the new permits were issued in Lea and Eddy counties in New Mexico. The bulk of the new Permian Basin permits were split between the Midland and Delaware basins. Adding permits in the region are Pioneer Natural Resources Co. (39), Novo Oil & Gas LLC (31), COG Operating LLC (34), Endeavor Energy Resources (58), Diamondback E&P (29) and Oxy USA Inc. (27).

New permitting by EOG Resources Inc. includes Eddy and Lea counties (37 total) in New Mexico, as well as 31 permits for Eagle Ford Shale acreage in South Texas and 13 new permits in Campbell County, Wyo.

In the Rocky Mountain region, Great Western Operating Co. LLC added 21 permits for its acreage in Weld County, Colo. GMT Exploration filed 20 permits in the southern Denver-Julesberg Basin in Elbert County, Colo.

The bulk of permitting in Louisiana was for Caddo Parish with Bayou State Oil Corp. (9) and Trinity Operating (5). Fifteen permits were issued for DeSoto Parish.

Seventeen Grady County, Okla., permits were issued to a combination of Citizen Energy, (7), Continental Resources Inc. (5) and Marathon Oil Corp. (5).

In the Appalachian Basin, the majority of the permitting was roughly split between Armstrong County, Pa., (8), Susquehanna County, Pa., (9).



Wells Permitted By Operator

Operator	No. of New Permits
EOG Resources Inc.	156
Pioneer Natural Resources Co.	39
Chevron Corp.	36
COG Operating LLC	31
Ascent Energy LLC	27
CrownQuest Operating LLC	22
Great Western Operating Co. LLC	21
GMT Exploration Co. LLC	20
Oxy USA Inc.	20
Mewbourne Oil Co. Inc.	19

Wells Permitted By State

State	No. of New Permits
Texas	505
New Mexico	308
Louisiana	68
Colorado	65
California	65
Oklahoma	62
Pennsylvania	42
West Virginia	25
Ohio	21
Wyoming	17

Wells Permitted By County

County, State	No. of New Permits
Lea, N.M.	162
Eddy, N.M.	146
Martin, Texas	52
Howard, Texas	44
Midland, Texas	37
Loving, Texas	34
Reeves, Texas	32
Weld, Colo.	30

RIG COUNT

U.S. energy firms continued to slowly add oil and gas rigs during June as crude prices rose to their highest since 2018, prompting some operators to return to the field.

The oil and gas rig count rose to its highest level since April 2020. According to Baker Hughes, total rig count was up about 77% during this time last year. It was also up 93% since falling to a record low in August 2020.

U.S. crude futures were trading below \$72/bbl on June 18, close to its highest since October 2018.

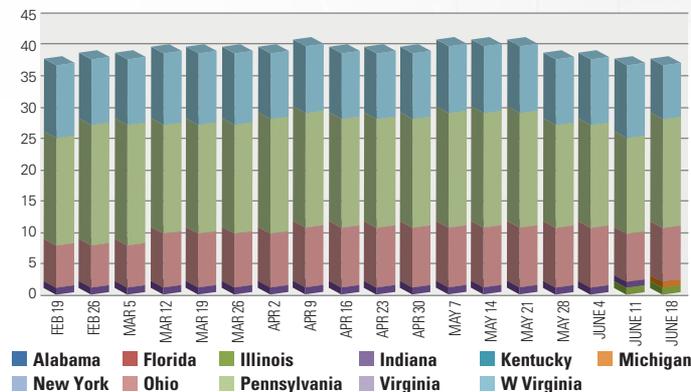
With prices mostly rising since October 2020, most energy firms are still focusing on capital discipline and investor returns, rather than expanding supply. Some analysts do not expect that extra spending will boost output at all and think it will only replace natural declines in well production.

U.S. crude production rose to 11.2 MMbbl/d in the middle of June, its highest since May 2020, according to data reported on June 16 from the U.S. Energy Information Administration (EIA). U.S. shale oil output usually responds rapidly to price signals, and the EIA forecast production from seven major shale formations would rise 38,000 bbl/d in July to about 7.8 MMbbl/d.



Eastern U.S. Rig Count

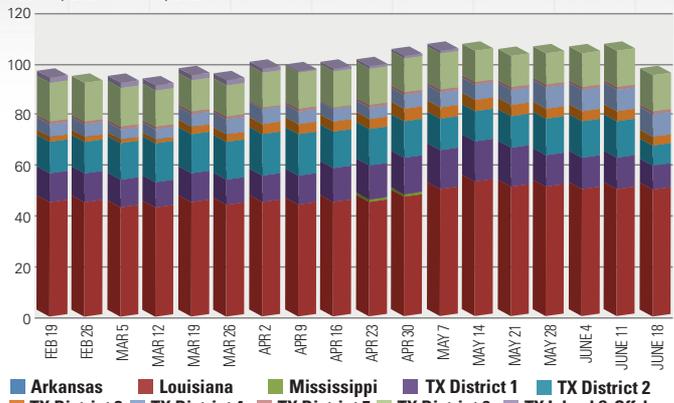
Feb. 19, 2021-June 18, 2021



Source: Baker Hughes Co.

Gulf Coast Rig Count

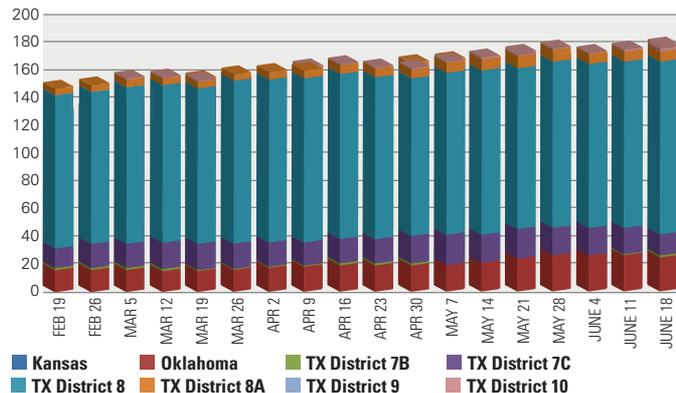
Feb. 19, 2021-June 18, 2021



Source: Baker Hughes Co.

Midcontinent & Permian Basin Rig Count

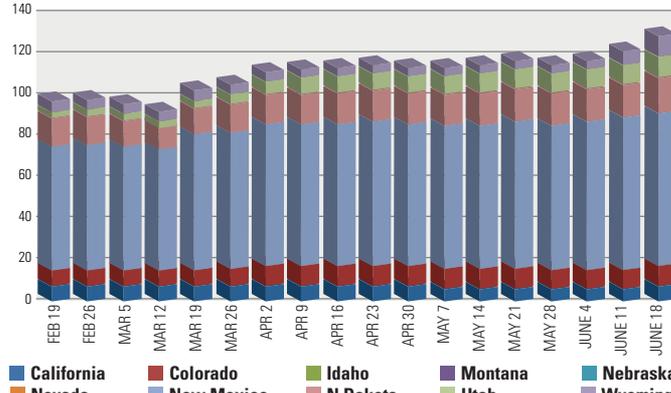
Feb. 19, 2021-June 18, 2021



Source: Baker Hughes Co.

Western U.S. Rig Count

Feb. 19, 2021-June 18, 2021



Source: Baker Hughes Co.

Data from Rextag ENERGY DATALINK

Mark Your Calendars

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FOCUS ON

Bakken-Three Forks

A synthetic natural gas plant in Beulah, N.D., will be converted to a hub for clean hydrogen that could be used as a fossil fuel alternative.

The Great Plains Synfuels plant, owned by Dakota Gasification, had several years of financial difficulties trying to compete with gas from the Bakken Shale oil field. Bakken Energy and Mitsubishi Power Americas will acquire and redevelop the gas plant. No specific timeline or cost for the project was disclosed.

Officials said the hub will consist of facilities that will produce, store, transport and consume carbon-free blue hydrogen.

Blue hydrogen is made when gas is split into hydrogen and CO₂—hydrogen can be used to replace fossil fuels for various applications, including power generation, industry and transportation. The resulting CO₂ can be stored underground or be used for EOR methods.

The plant could help North Dakota reduce gas flaring in its oil fields. The state recently set a new high for gas capture (94%).

Gas production outpaced oil in North Dakota's Bakken Shale during March, according to the state's Department of Mineral Resources, which included a Three Forks discovery in November 2020 by Marathon Oil Corp. (16.54 MMcf per day) and a Bakken completion in April 2019 by Hess Corp. (27.6 MMcf per day).

Data from Rextag 

Bakken-Three Forks Top Producing Counties

County, State	MMboe
McKenzie, N.D.	1,396.01
Mountrail N.D.	843.08
Dunn, N.D.	711.43
Williams, N.D.	626.62
Richland, Mont.	121.94
Divide, N.D.	112.26
Burke, N.D.	41.57
Stark, N.D.	35.39
Roosevelt, Mont.	25.05
Billings, Mont	23.88

Source: Datalink as of June 18, 2021.

Bakken-Three Forks Top Producing Operators

County	(MMboe)
Continental Resources, Inc.	479.24
Whiting Petroleum Corp.	387.41
Hess Corp.	296.28
XTO Energy Inc.	283.29
Burlington Resources Oil & Gas Co. LP	254
Oasis Petroleum Inc.	217.17
Marathon Oil Corp.	213.19
EOG Resources Inc.	188.43
WPX Energy Inc.	144.96
QEP Energy Co.	144.26

Source: Datalink as of June 18, 2021.

Bakken-Three Forks Cumulative Production - Top Producing Wells

Operator	Well	County, State	MMboe	Comp. Date
Petro-Hunt	USA 2D-3-1H	McKenzie, N.D.	2,235,584.67 (Bakken)	10-2006
Continental Resources Inc.	Whitman 2-34H	Dunn, N.D.	2,050,629.0 (Bakken)	9-2011
EOG Resources Inc.	Hawkeye 02-2501H	McKenzie, N.D.	1,486,581.83 (Bakken)	12-2013
Petro-Hunt	USA 153-95-4B-9-1H	McKenzie, N.D.	1,451,871.00 (Bakken)	11-2011
EOG Resources Inc.	Austin 39-3204H	Mountrail, N.D.	1,404,247.50 (Bakken)	9-2013
Murex Petroleum Corp.	Chandler James 25-36H	Mountrail, N.D.	1,251,984.67 (Bakken)	10-2008
Whiting Oil & Gas Corp.	Behr 11-34H	Mountrail, N.D.	1,189,416.83 (Bakken)	6-2008
XTO Energy Inc.	HBU Boucher 41X-21	Williams, N.D.	1,151,457.33 (Bakken)	3-2009
Continental Resources Inc.	Hanna 2-31H	Richland, Mont.	1,109,172.17 (Bakken)	6-2005
Petro-Hunt	USA 153-95-22D-15-1HS	McKenzie, N.D.	1,058,502.17 (Bakken)	10-2015

Source: Datalink as of June 18, 2021.

INTERNATIONAL HIGHLIGHTS

Major international oil and gas companies are changing their strategies and investments to reduce carbon emissions and are embracing the fossil fuel-based energy transition to combat global warming.

Earlier this year, Total ASA ended its membership with the American Petroleum Institute after reviewing the climate positions of that organization. Total shareholders voted overwhelmingly in favor of rebranding Total to TotalEnergies, as the firm seeks to reflect a shift in focus to renewable energy.

In June, Equinor ASA announced it will speed up investments in renewable energy and low carbon solutions ahead of peak production in 2026.

The company plans to dedicate more than 50% of its investments to renewables and CO₂ capture by 2030 following demands for change from investors and some Norwegian politicians.

A Dutch court ordered Royal Dutch Shell Plc to move more aggressively to cut greenhouse-gas emissions. The International Energy Agency said the world needed to halt investment in new oil and gas projects by next year to achieve net-zero emissions by the middle of the century.

BP Plc announced it would pivot away from oil and gas to an international oil company producing resources as an integrated energy company. They plan to be a net-zero company by 2050 and to diversify into other energy resources such as renewables, biofuels and hydrogen.

—Larry Prado

1 Mexico

Jaguar EP announced that it found gas and light crude reserves in two of its wells in the Burgos and Tampico-Misantla basins. The discovery in Dieciocho de Marzo Field in the Burgos Basin has estimated gas reserves of 30-50 Bcf. The second discovery, Spinini in Block TM-01 in the Tampico-Misantla Basin, is a gas and light oil discovery with 160 Bcf of gas and 20-30 MMbbl of light crude. Mexico City-based Jaguar will process the data to characterize the area geology and begin planning to produce the resource.

2 Trinidad

Challenger Energy is underway at an onshore Trinidad appraisal well, #2-Saffron. The appraisal follows the completion of #1-Saffron that encountered hydrocarbons in both the Middle Cruse and Lower Cruse reservoirs. The #2-Saffron has a planned depth of 4,500 ft, and the operator plans to gather more data from Saffron Field to create a development plan. The Calgary-based company estimates that the field could produce 1,000-1,500 bbl of oil per

day by the end of 2021 and 4,000 bbl of oil per day when the field is fully developed.

3 Guyana

Another offshore Guyana discovery was announced by **Exxon Mobil Corp.** at #3-Longtail in the Stabroek Block. The well hit 230 ft of net pay, including newly identified, high-quality, hydrocarbon-bearing reservoirs below the original #1-Longtail discovery intervals. Area water depth is 6,100 ft. In other drilling activity in the block, an evaluation well at #2-Mako confirmed the quality, thickness and areal extent of the reservoir. Irving, Texas-based Exxon Mobil holds 45% interest in the Stabroek Block with **Hess Corp.** (30%) and **China National Offshore Oil Corp.** (25%).

4 Norway

Stavanger-based **Equinor ASA** announced an oil discovery in offshore Norway production license PL 554. Recoverable resources are estimated at 8-23 MMbbl of oil equivalent. The #34/6-5 S and #34/6-5 ST2 are in the Garantiana West prospect and are northeast of

Visund Field. The primary exploration target for #34/6-5 S was to prove hydrocarbons in Cook (early Jurassic). The secondary exploration target was to examine the hydrocarbon potential in Nansen (early Jurassic/late Triassic). The #34/6-5 S encountered an oil column of 86 m in Cook. The #34/6-5 S also encountered sandstones in Nansen, but the reservoir is auriferous and the exploration target is classified as dry. A formation test indicated good flow qualities with stable flowing pressure and low-pressure drop with a consistent pressure buildup. The #34/6-5 S was drilled to 3,952 m and completed in Nansen. The #34/6-5 ST2 was drilled to 3,750 m and was completed in the upper part of Amundsen.

5 Norway

Wintershall announced a gas, condensate and oil discovery at the Dvalin North prospect in the Haltenbanken area of the Norwegian Sea. According to the Kassel, Germany-based company, the Dvalin North discovery is estimated to have between 33 and 70 MMboe. The #6507/4-2 S is north

of the company's operated Dvalin Field. The well also encountered hydrocarbons in two shallower secondary targets, with a combined resource estimate of 38-87 MMboe. The discovery is in an area with existing Wintershall-operated and nonoperated infrastructure. The venture encountered a 33-m gas column and a 114-m condensate column in Cretaceous Lysing and Lange. In the primary target in Garn, the well hit an 85-m gas column. Dvalin North is the first well of a two-well exploration and appraisal program for Wintershall in the Haltenbanken area. Wintershall is the operator of the Dvalin North discovery in PL 211 with a 55% share. License partners include **Petoro** and **Sval Energi**.



6 Namibia Reconnaissance Energy Africa

has spud a second well in Namibia, #6-1, in a three-well Kavango Basin program in the Kalahari Desert. The venture has a planned depth of 3,800 m and will evaluate a Permian petroleum system discovered in the first well (#6-2). These first two wells are within one of five major sub-basins of the larger, more laterally extensive, Permian-aged deep Kavango Basin in the Karoo Group. The company will conduct a whole core and sidewall coring operations as well as running a full suite of well logs through the conventional targets and source rocks. In addition, a vertical seismic profile will be run to tie-in to a planned 2-D seismic program scheduled for June 2021. London-based Reconnaissance Energy holds a 90% interest in petroleum exploration license PEL 73 and 100% interest in petroleum license PEL 001/2020 in northwestern Botswana.

7 Turkey Turkish Petroleum Corp.

(TPAO) announced a discovery of 135 Bcm of additional gas in the Turkish exclusive economic zone in the southern Black Sea. The #1-Amasra well is in Sakarya gas field. The additional reserves increase the total discovery in the region to 540 Bcm. In 2020, a TPAO drillship discovered 405 Bcm of gas at #1-Tuna in the deepwater portion of the field. TPAO plans to deliver gas from the field to its main grid in 2023 with sustained plateau production starting in 2027 or 2028. The discovery is in the western Black Sea Block AR/TPO/KD/C26-C27-D26-D27, which is held 100% by Ankara-based TPAO.

8 Pakistan Oil and Gas Development Co.

discovered gas in Jandran Exploration License at exploration well #04-X Jandran located in District Barkhan, Balochistan Province. The well was drilled to a total depth of 1,200 m in Parh Limestone. During a drillstem test, it flowed 7.08 MMcf of gas with less than 1 bbl of condensate per day from Mughal Kot. It was tested on a 32/64-inch choke with a flowing wellhead pressure of 1,300 psi. Mumbai-based Oil and Gas Development is the operator.

9 Malaysia PTTEP Exploration and Production

announced a gas discovery in offshore Sarawak, Malaysia. The wildcat exploration well is in Block SK438. The #1-Kulintang was drilled to 2,238 m, and area water depth is 48 m. PTTEP expects to drill another exploration well in this block in the second quarter of 2021. PTTEP, based in Bangkok, is the operator with 80% participating interest with partner **Petronas** holding 20% interest.

10 Indonesia

Rome-based **Eni** tested appraisal well #2 Maha in Indonesia's West Ganai Block offshore Kalimantan. The Maha Field discovery was drilled to 2,970 m, and area water depth is 1,115 m. It hit 43 m of gas-bearing, net sands with excellent reservoir characteristics in a Pliocene zone. The production

test was limited by surface facilities, and it flowed 34 MMcf per day. Wireline logging has been completed and cores have been collected. Two other appraisal wells are planned for the field, and production could be tied back to the Jangkrik FPU. Eni is the operator of West Ganai Block with partners **Neptune Energy** and **P.T. Pertamina**, both holding a 30% stake.

11 Australia

Vintage Energy announced results from testing at appraisal well #1-Vali in the South Australia portion of the Cooper Basin. A wireline logging sample confirmed the presence of gas in Toolachee and Patchawarra. One of the main objectives of the appraisal well in ATP 2021 was to assess the potential for gas in a Toolachee four-way dip closure, which was not tested in #1-Vali ST1. A rig is being mobilized to drill an exploratory test at #1-Odin to study a large fault-bounded Patchawarra closure. The venture is updip of a 1987 well, #1-Strathmount, which was plugged and abandoned after discovering a non-commercial hydrocarbon accumulation. The #1-Strathmount is interpreted to have conventional gas pay in Toolachee and both conventional and low permeability gas pay in Patchawarra. The Odin structure has been de-risked by tests at #1-Vali ST1 and #2-Vali and has the potential for gas in Toolachee and development in Patchawarra. The certified gross 2C contingent resource for ATP 2021 is 37.7 Bcf of gas (18.8 Bcf net). The joint-venture partners are **Goodwood**, South Australia-based Vintage (50%, operator **Metgasco** (25%) and **Bridgeport** (25%))

NEW FINANCINGS

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Pioneer Natural Resources Co.	NYSE: PXD	Dallas	\$3,500	Closed shelf registration in a new filing on June 30 that covers up to roughly 21.2 million common shares expected to be sold from time to time in amounts and prices that will be determined at the time of the offering. The filing disclosed that beneficial shareholder Q-FPP (VIII) Investment Partners LLC , majority owned by funds managed by affiliates of Quantum Energy Partners , will sell its entire 2.5% stake, amounting to about 6.2 million common shares. Also selling will be Double Eagle Energy Holdings III LLC , which is majority owned by funds managed by affiliates of Apollo Global Management Inc.
Energy Transfer LP	NYSE: ET	Dallas	\$900	Priced an underwritten public offering of 900,000 of its 6.5% series H fixed-rate reset cumulative redeemable perpetual preferred units at \$1,000 each. Proceeds will be used to repay certain of its outstanding indebtedness and for general partnership purposes. J.P. Morgan, Mizuho Securities, PNC Capital Markets LLC and Truist Securities are joint book-running managers.
Rice Acquisition Corp. II	NYSE: RONI	Carnegie, Pa.	\$345	Closed IPO of 34.5 million units, including 4.5 million units sold pursuant to the full exercise of the underwriters' overallotment option, at a price of \$10 each. Proceeds will be used to effect a merger, share exchange, asset acquisition, share purchase, recapitalization, reorganization or similar business combination with one or more businesses or entities in the broadly defined energy transition or sustainability arena. Citigroup and Barclays were joint book-running managers. AmeriVet Securities and Academy Securities were co-managers.
Northern Oil and Gas Inc.	NYSE American: NOG	Minnetonka, Minn.	\$87.5	Priced underwritten public offering of 5 million shares of its common stock at \$17.50 each. Includes 30-day option granted to underwriters to purchase up to an additional 750,000 shares of its common stock. Proceeds will be used to fund the cash purchase price of a pending acquisition of certain nonoperated oil and gas properties and interests located in the Permian Basin. A portion of proceeds may also be used to repay outstanding borrowings under its revolving credit facility. Wells Fargo Securities is lead book-running manager.
Riley Exploration Permian Inc.	NYSE American: REPX	Oklahoma City	\$50	Priced public offering of about 1.7 million shares of its common stock at \$30 each. Includes 30-day option granted to underwriters to purchase an additional 250,000 shares of stock. Proceeds of \$25 million will be used to accelerate EOR pilot program in Yoakum County, Texas. Remaining proceeds for general corporate purposes, including, but not limited to, financing of capex, acquisitions, investments and other business opportunities, repayment or refinancing of outstanding debt plus working capital purposes. Truist Securities is sole book-running manager. Roth Capital Partners is joint lead manager. Seaport Global Securities is co-manager.
Talos Energy Inc.	NYSE: TALO	Houston	N/A	Priced an underwritten public offering of an aggregate of 5 million shares of its common stock by certain affiliates of Apollo Global Management and Riverstone Holdings LLC . Talos is not selling any shares of common stock and will not receive any proceeds from the sale. BMO Capital Markets is sole underwriter.

DEBT

Occidental Petroleum Corp.	NYSE: OXY	Houston	\$2,500	Commenced offer to purchase for cash up to a maximum aggregate purchase price, excluding accrued but unpaid interest, equal to \$2.5 billion, of its 2.7% 2022 notes, 2.7% 2024 notes, 3.5% 2025 notes, 3.4% 2026 notes, 3.2% 2026 notes and floating rate 2022 notes. Barclays Capital Inc., BofA Securities Inc., MUFG Securities Americas Inc., RBC Capital Markets LLC and Wells Fargo Securities LLC are lead dealer managers and lead solicitation agents. Global Bondholder Services Corp. was retained to serve as the tender agent and information agent.
Callon Petroleum Co.	NYSE: CPE	Houston	\$650	Priced 8% senior unsecured notes due 2028 in a private offering. Proceeds will be used to fully redeem all of the 2023 notes and partially repay amounts outstanding under its senior secured revolving credit facility.
Strathcona Resources Ltd.	N/A	Calgary, Alberta	\$500	Priced a private offering of 6.875% senior unsecured notes due 2026. Proceeds will be used to repay a portion of the outstanding borrowings under its revolving credit facility and operating facility without canceling the revolving commitments thereunder and repay a portion of the outstanding borrowings under its term loan facility.

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Laredo Petroleum Inc.	NYSE: LPI	Tulsa, Okla.	\$400	Priced a private offering to eligible purchases of 7.75% senior unsecured notes due 2029 at par. Proceeds will be used for general corporate purposes, including repaying the borrowings outstanding under its senior secured credit facility.
NuVista Energy Ltd.	TSX: NVA	Calgary, Alberta	CA\$230	Entered into an underwriting agreement to sell, on a private placement basis, 7.875% senior unsecured notes due 2026, increased from previously announced offering of \$200 million. Notes will be issued at \$989.89 expressed as a price per \$1,000 principal amount under a new trust indenture. Proceeds will be used, together with borrowings under the its credit facility, to redeem all of the existing \$220 million senior unsecured notes due 2023 at a redemption price of 101.625%, plus accrued and unpaid interest. CIBC Capital Markets and RBC Capital Markets are joint book-runners.
Blackbuck Resources LLC	N/A	Houston	\$50	Closed on a sustainability-linked term loan with Riverstone Credit Partners LLC , a dedicated energy and power credit fund managed by Riverstone Holdings LLC . Provides an initial commitment of \$50 million plus an accordion feature adjusted based upon adherence to certain sustainability performance targets, which are defined by key performance indicators set internally by the company. Foley & Lardner LLP was legal adviser to Blackbuck. Baker Botts LLP was legal adviser to Riverstone.
Carrier Energy Partners II LLC	N/A	Sugar Land, Texas	N/A	Closed a new senior secured first lien term loan. Proceeds will be used to retire existing borrowings under the company's maturing reserve-based loan facility. Energy Capital Solutions LLC was financial adviser and placement agent. Thompson & Knight LLP was legal adviser.

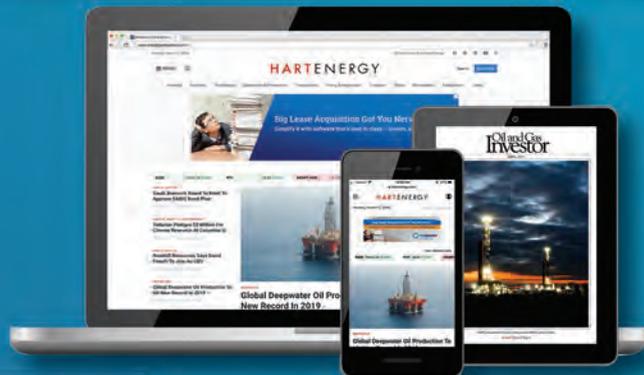
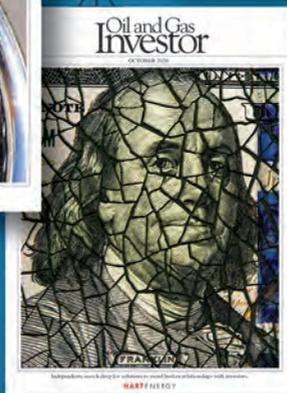
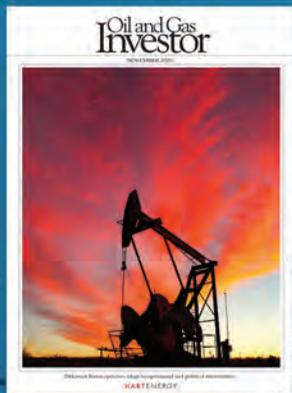


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LESLIE HAINES,
EXECUTIVE EDITOR-
AT-LARGE

Don't doubt it for a minute: Our fate ultimately comes down to the same old thing—global oil demand. There are so many well-intentioned analyses, bold projections, passionate debates or ugly protests against fossil fuels, emissions, global warming, politics, returns, whatever, floating around, but the industry's fate still comes down to what level of oil demand there is now, and what it will be in the future. Steady as she goes, declining slightly, rising slightly?

U.S. producers will be essential workers so long as there is sufficient oil demand. The question is, how will these producers meet that need in light of declining fields, net-zero goals, pipeline opposition and capital availability challenges? Which producers will do it?

In recent days, events show that as always, just as since its formation in 1960, headlines about OPEC deliberations can whipsaw oil prices and equities. Nothing new there. At press time, the United Arab Emirates and Saudi Arabia reached a compromise on quotas for the UAE, and the latter then said it will support extending the current OPEC+ supply agreement from April 2022 through to December 2022. This is good news, unless more oil coming to market skews the price again.

Market balances also depend on how many barrels of U.S. shale are winding their way through the pipeline at any given time. So far, American producers are drilling at a cautious pace to keep their production flat, or to increase it minimally. That sets up the likelihood of higher oil prices down the pike. With oil already around \$74/bbl, plenty of analysts find it easy to call for \$80/bbl by year-end, and a few say \$100 could be reached.

We learned a lot about demand dynamics this past year, and we were reminded that it is elastic. The drastic fall in demand during the pandemic showed how much of an extreme economic or lifestyle change we would need to make to reach the much-touted and unrealistic net zero goal of the Paris Accord. For after all was said and done, experts such as the just-released BP Statistical Review of Energy say that global oil demand only fell about 9%.

Anti-fossil fuel people, take note! A transition away from oil is not going to be easy, and it will take decades. Heated rhetoric is fine; estimates and projections are speculative at best. Actual results that are feasible, scalable and economic do not necessarily follow.

Then again, the Fourth of July weekend reminded us just how much oil consumption can climb and how quickly, with more land,

sea and air travel occurring as the economy gets back to normal and people open their wallets. Transportation is a key factor to watch.

We know that the pandemic drastically changed both consumer and commercial transportation trends, "... but global oil demand will probably continue to grow through 2030," according to a new study by the Columbia University Center on Global Energy Policy and the University of California, Davis Institute of Transportation Studies.

Forty-four leading energy and transportation experts were involved, including well-known folks such as Marianne Kah, formerly the chief economist for Conoco for 25 years; and Mark Finley, a Rice University fellow in energy and global oil at the Baker Institute for Public Policy, and former economist for BP's annual energy look-back. The group sought to understand how COVID-19 and other political, economic, social and technological drivers may impact transportation activity and thus, the global demand for oil.

They developed four scenarios featuring "varying speeds of economic recovery, levels of government intervention in energy markets and endurance of mobility trends that started during pandemic lockdowns."

Here's what jumps out to me: "*In three of the four scenarios, global oil demand continued to grow through 2030.*" (Italics mine.)

"Only under the final scenario—in which the pandemic's disruptive impact to the global economy and mobility combined with strong government intervention to accelerate alternative—did oil demand decline after 2025."

If demand, then supply? In July, Rystad Energy released some information of its own. It said about 1,300 billion barrels of oil are sufficiently profitable, and technically recoverable, to be produced before the year 2100 at a Brent real oil price of \$50/bbl.

"In this scenario, global production of oil and natural gas liquids will fall below 50 million barrels per day by 2050. Exploring, developing, processing and consuming this amount of commercially extractable oil will lead to gross greenhouse-gas emissions of less than 450 gigatonnes of CO₂ from now until 2100.

"This is compliant with IPCC's carbon budget for global warming limited to 1.8 C by 2100," says Rystad Energy's head of analysis, Per Magnus Nysveen.

This is good news for your strategy planning. The industry is "safe" for at least 70 years. There is plenty of oil to be recovered. Consumers will still need it and rely on it unless something else comes along.



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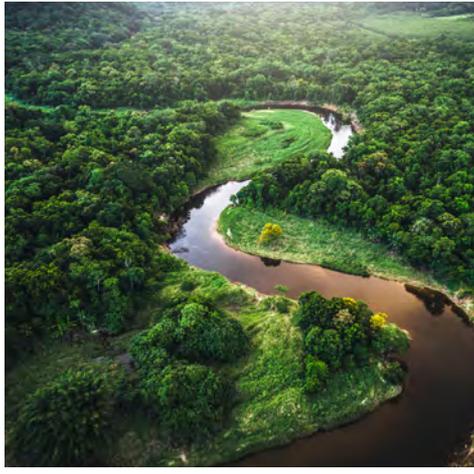
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