

# Oil and Gas Investor

## **PUMP UP THE VOLUME**

Russia Weaponizes Natural Gas, Answering Sanctions with Global Supply Shock

## **THE TIDE IS HIGH**

Elements Align for Gulf of Mexico Wind

**SPECIAL  
TRIPLE ISSUE  
FEATURING**

**ENERGY ESG HEATS UP  
US NATURAL GAS  
GAINS MOMENTUM**

## **EXCLUSIVE Q&A WITH CHESAPEAKE ENERGY**

Chief Nick Dell'Osso Shares  
'Rock>Returns-Runway' Strategy

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SEPTEMBER 2022

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

### MINERALS & ROYALTIES STATISTICS

~\$2.4 Billion

Aggregate Transaction Volume Since 2017

15 Closed Transactions Since 2017

### PRIVATE FINANCING STATISTICS

~\$11.7 Billion

Aggregate Capital Raised Since 2009

37 Closed Transactions since 2009

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## CHESAPEAKE ROCKS A RETURNS RUNWAY

In an exclusive interview, Chesapeake Energy Corp. CEO Nick Dell'Osso discusses the company's new, focused financial strategy and what makes Chesapeake "the most compelling investment opportunity in the energy space today."

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Information contained herein is believed to be accurate; however, its accuracy is not guaranteed. Investment opinions presented are not to be construed as advice or endorsement by *Oil and Gas Investor*.

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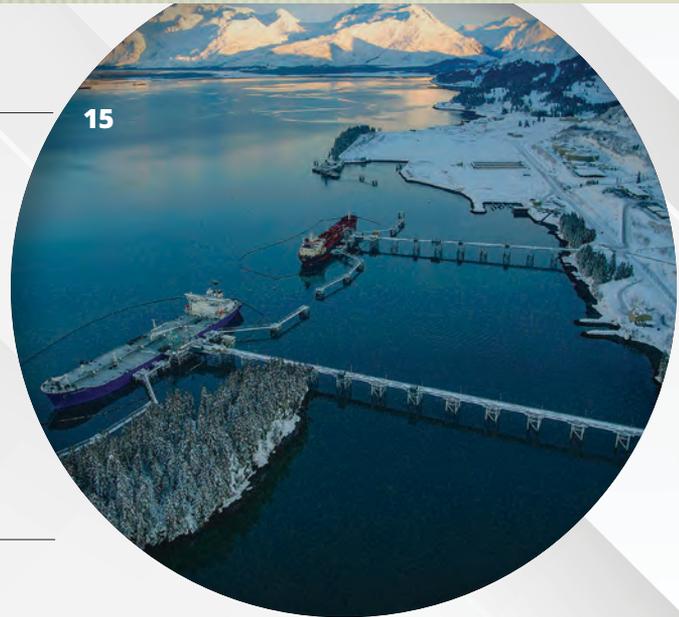
### PERMITS

Only one state outside Texas—Colorado—was able to post a monthly drilling permit total greater than that of Martin County, Texas, which had 100.

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### Energy ESG Conference:

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**ABOUT THE COVER:** Hart Energy got the opportunity to photograph Chesapeake Energy Corp. CEO Nick Dell'Osso at the company's corporate campus in Oklahoma City for the cover of the September issue. Photo by Marshall Hawkins.

# NOG CLOSES DEALS

*Over \$2.0 Billion of Deals Signed Since 2018*



## PERMIAN

50+ Transactions  
*including:*



**\$550 Million+**

2021-2022

## WILLISTON

250+ Transactions  
*including:*



**\$1.0 Billion+**

2018-2022

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**Reliance  
Marcellus, LLC**



**\$120.9 Million**

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# SUPREME COURT, SUPREME POWER

## RING THE BELL



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**T**his summer, the U.S. Supreme Court fired off the first of what may become a salvo of shots aimed at reigning in President Joe Biden's so-called "Whole-of-Government" approach to climate change.

June closed out a contentious, historic term in which the justices—all of whom serve with a lifetime appointment—split along conservative and liberal lines, 6-3, on a host of controversial issues. From favoring a football team's ability to pray at the 50-yard line to tossing out *Roe v. Wade* federal protections for women seeking an abortion, the high court did not shrink from its duty to lay down the law—even if it did appear to choose one side—time after time.

Any decision by this court may set precedent for decades and influence policy well beyond a two-term presidency.

But it was a June 30 decision that may reverberate throughout the climate debate and energy companies' role in it.

In the *West Virginia v. Environmental Protection Agency (EPA)* case, Chief Justice John Roberts penned the opinion of the court that determined the federal agency was acting beyond its scope.

The case is unique in that the prevailing side relied on the long-dormant "major questions doctrine," a principle that requires Congress to be explicit when granting authority to a federal agency that may have sweeping economic or political impact. The question before the court was whether the Clean Power Plan, a centerpiece of the Obama administration, granted the EPA with the authority of "generation shifting" by requiring existing power plants to meet new emissions restrictions that would cause a shift from coal to other sources of energy.

"There is little reason to think Congress assigned such decisions to the agency," Roberts wrote, adding that it is "highly unlikely that Congress would leave to 'agency discretion' the decision of how much coal-based generation there should be over the coming decades."

The question now becomes whether other federal agency's climate initiatives will be muted by the court's read of congressional intent.

While the case may represent a setback for climate activists, it is a "victory for separation of powers," Travis Wofford, a partner at Baker Botts and chairman of the law firm's corporate practice, said to me during a recent interview.

"I think that the Supreme Court has definitely set itself out as the defender of checks and balances between the executive and legislative branches."

That might jeopardize a new emissions disclosure rule at the U.S. Securities and Exchange Commission (SEC). The ruling on the EPA case creates significant

uncertainty about the future of federal climate policy and the ability of federal agencies to pursue ambitious climate goals, several analysts have said.

The SEC rule, which becomes effective in October, requires all public companies to disclose emissions data and climate-related financial risks. Atwell pointed out that multiple state attorneys have already vowed to challenge the proposal. The major questions doctrine may give them standing to do so.

Still, even in the absence of a government order, many companies are implementing their own carbon transition plans. For them, the route toward a low-carbon future is at least partially paved by the basic economics of resource.

Duke Energy, one of the largest power companies in the country, has used coal to produce energy since 1911. But by the end of 2025, the firm intends to retire about one-third of its coal capacity, and by 2035, Duke will have fully exited the coal industry.

Utility companies are largely phasing out of coal just based on the economics and pricing. Moreover, local and state governments also have authority to make laws governing emissions, which provides something of a backstop and "continues to pressure companies to move toward lower carbon alternatives," Atwell said.

So while the EPA ruling doesn't kill off the nation's own low carbon transition, the Supreme Court's decision may slow it down by limiting the scope of federal agency ambition.

That's one way of looking at it.

On the other side is the possibility that agency officials' commitment to their low-carbon cause deepens and their resolve grows stronger to put more aggressive policies in place. While recognizing the potential for legal challenges to such policies, they could make some progress before the wheels of justice force them to roll back.

"It could potentially embolden them in the short term," Atwell said.

What's next could be more of the same. Watch for legal challenges to federal climate policies during the course of the next year. One that could be at risk is a new rule the U.S. Department of Transportation is expected to introduce, which would require states to track and set emission reduction goals for highways. That policy would have such far-reaching implications that, if it came into the Supreme Court's purview, could be within the scope of the major doctrines question.

If this court leans on the major doctrines argument, it should raise questions about the future of federal rulemaking for the duration of this court's rule—and how effective federal rulemaking can be in managing climate regulations. **OCI**



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# SELF-INFLICTED WOUNDS

## ENERGY POLICY



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**H**ow quickly things can change. Last December, U.S. Sen. Joe Manchin (D-WV) stunned the political world when he boldly stated that the so-called “Build Back Better” spending bill was dead. Its death was again proclaimed several times throughout the year. Then suddenly, in late July, a deal was struck between Sen. Manchin and Sen. Majority Leader Chuck Schumer (D-NY) that would allow a \$369 billion tax, climate and energy package titled “Inflation Reduction Act” to move forward under the budget reconciliation process. The bill, which is much smaller than the original Build Back Better bill, would apply a 15% corporate minimum tax, expand funding for the IRS, and extend and increase tax credits for renewable projects and electric vehicles through mechanisms such as the production tax credit and investment tax credit.

The package also has a number of provisions that are consequential to the oil and gas industry. They include some positive items such as extending and expanding the 45Q tax credits for carbon capture and storage, holding federal onshore and offshore oil and gas lease sales, reinstating the results of an offshore lease sale and providing a green hydrogen tax credit.

At the same time, the bill also raises the minimum royalty for onshore and offshore oil and gas production, increases rental rates and surety bonding requirements and imposes a fee on methane that is leaked, vented or flared. It also reinstates the decades-old Superfund tax at a rate of 16.4 cents per barrel of imported oil. Notably missing from the package are international tax changes that would have been negatively impactful for U.S. oil companies with global operations.

As part of the deal with Sen. Schumer and House Speaker Nancy Pelosi (D-CA), Sen. Manchin was assured that he would have Democratic support for a separate permitting reform bill that would pave way for the permitting of the Mountain Valley Pipeline (providing critical take-away capacity for Appalachian gas), as well as other reforms including a two-year time limit for environmental reviews of large projects. Given the post-reconciliation timing for such legislation and the fact that it would require 60 votes in the Senate, passage of the permitting bill seems far from assured.

The compromise legislative package—which cleared its last hurdle in the Senate when Sen. Kristen Sinema (D-AZ) secured an agreement to eliminate proposed changes to carried interest

taxation, modify the corporate minimum tax provision and establish a 1% excise tax on stock buybacks—is a major win for the renewable energy industry, providing billions in incentives. For the oil and gas industry, it is more of a mixed bag, providing tax credits to decarbonize and a path forward on limited public offshore and on-shore leasing, albeit with increased royalties and fees. At the very least, it acknowledges the need for continued domestic oil and gas exploration and production.

In light of geopolitical realities and the perception of many Americans that the White House has been standing in the way of domestic energy production, even if not publicly lauded, the bill’s provisions supporting oil and gas access may in fact be more than welcomed by the administration. It is no secret that OPEC does not have enough spare capacity to significantly impact global oil prices. For about a year, OPEC has failed to meet its quota, falling roughly 400,000 bbl/d short in June. OPEC members such as Libya, Algeria and Venezuela are mired in civil war, political chaos or economic disintegration to the point that they cannot realistically produce, much less explore for, oil, often rendering their quota promises as nothing short of illusory.

While Saudi Arabia and the United Arab Emirates have spare capacity, it is not in their self-interest to exceed OPEC quotas, especially in the early days of a global recession. President Biden’s visit to Saudi Arabia did indeed yield a commitment for the Kingdom to add more supply to the market, but their 100,000-bbl/d pledge increase will not be sufficient to even reach the total OPEC quota, let alone surpass it. In short, the U.S. is the only producer that could make a significant difference in global supply.

The pain and wounds that have befallen the American consumer and economy have been self-inflicted. Compromises reached in the Inflation Reduction Act cannot fix the damage that has been done by a year of attacks on the industry.

In the short term, the factor most likely to bring oil prices down is demand destruction from a recession that was triggered by inflation and high oil prices. In fact, the initial signs of that very dynamic seem to have started to emerge in early June. Had we encouraged rather than targeted our domestic energy industry, high oil prices and perhaps the recession might have been avoided altogether. 

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Jack Belcher.



**ConocoPhillips Co.'s Alpine Field  
on the western North Slope of Alaska  
required more than eight years of  
environmental studies, three years  
and 6 million man-hours to build**



1.2 billion  
and cost

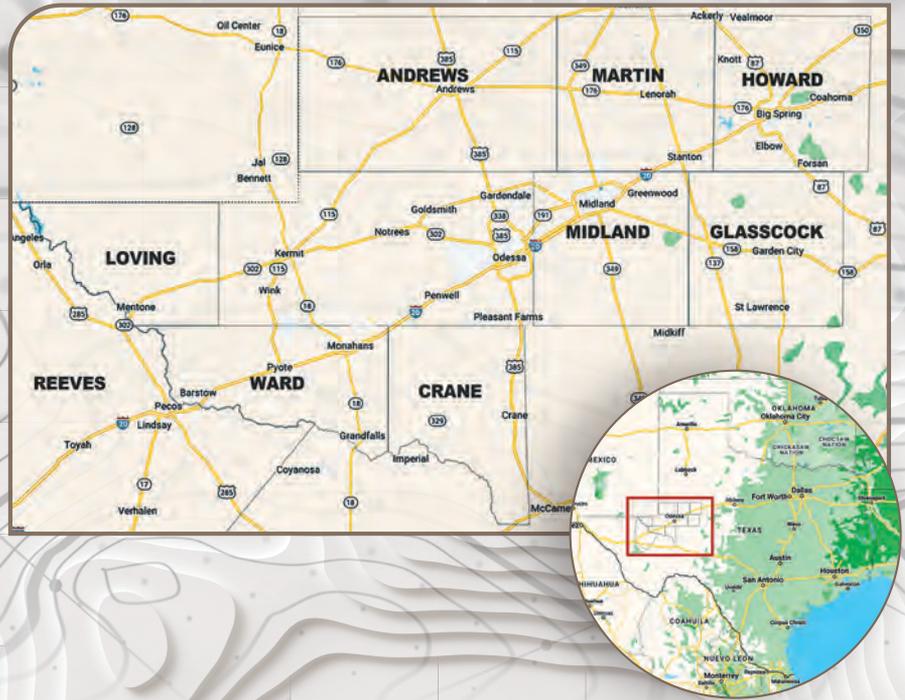
# PERMITS

Only one state outside Texas—Colorado—was able to post a monthly drilling permit total greater than that of Martin County, Texas, which had 100. Martin's neighbors were no slouches, either. Midland County had more than North Dakota, Louisiana, Oklahoma and Wyoming. Indeed, Midland had more than Oklahoma and Wyoming combined.

U.S. drilling permits have been well below year-ago totals so far in 2022. June's total of 1,459 was down 37% from the same-month total of 2,232 in 2021. But June was also 10% ahead of May's total and 20% above June 2020.

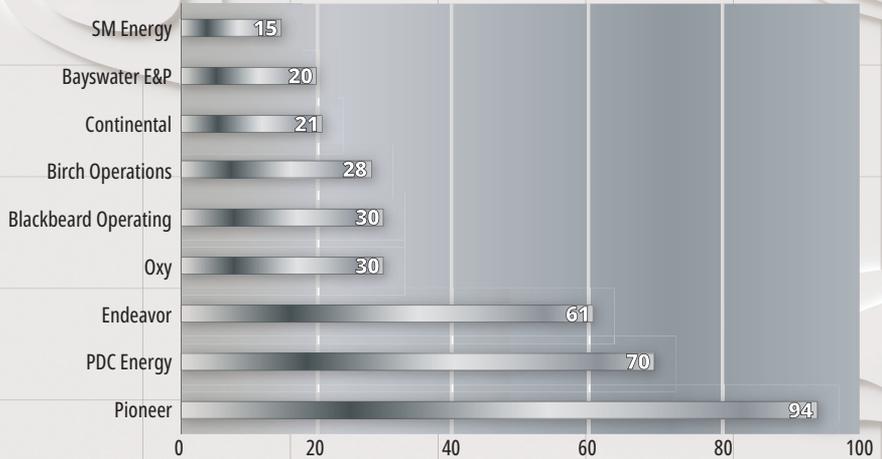
Texas has dominated permitting in 2022, accounting for 68% of U.S. permits in June, compared to 31% in the same month of 2021. The Texas total for June 2022 was 990, up 41% from 2021 and more than triple the 300 permits in June 2020, when the future appeared quite grim.

The nine top Texas counties for the most recent monthly permits, all located in the Permian Basin, constitute 37% of all permits in the U.S.

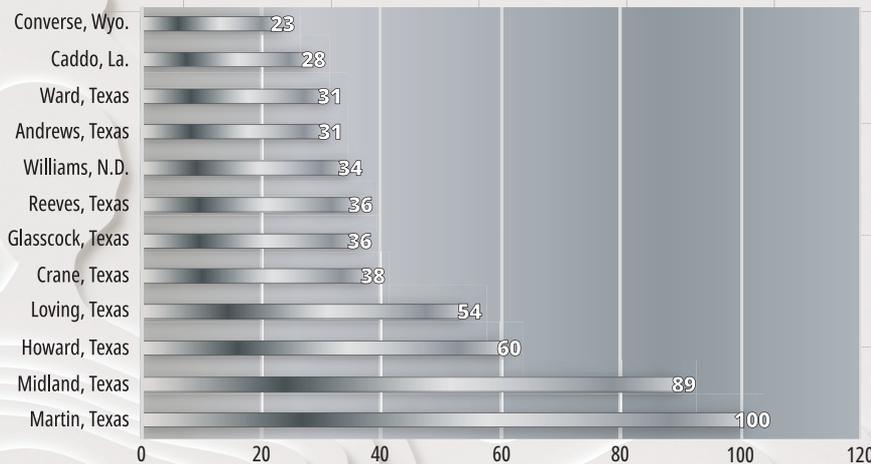


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## Permitted Wells By Operator



## Permitted Wells By County Monthly





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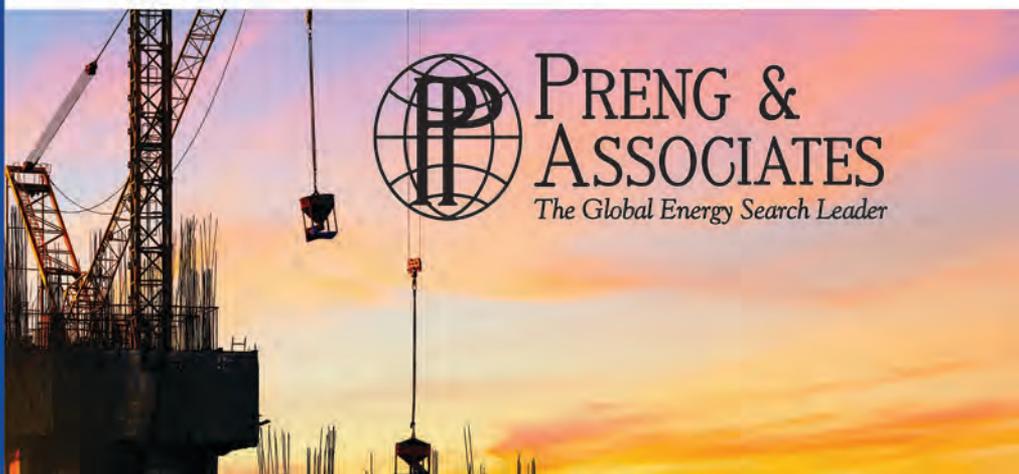
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## CONSOLIDATIONS CONTINUE THROUGHOUT 2022

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

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

*Join us as we delve into the final quarter of 2022 and look at A&D strategies and opportunities awaiting us in 2023.*



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# FOCUS ON: ALASKA

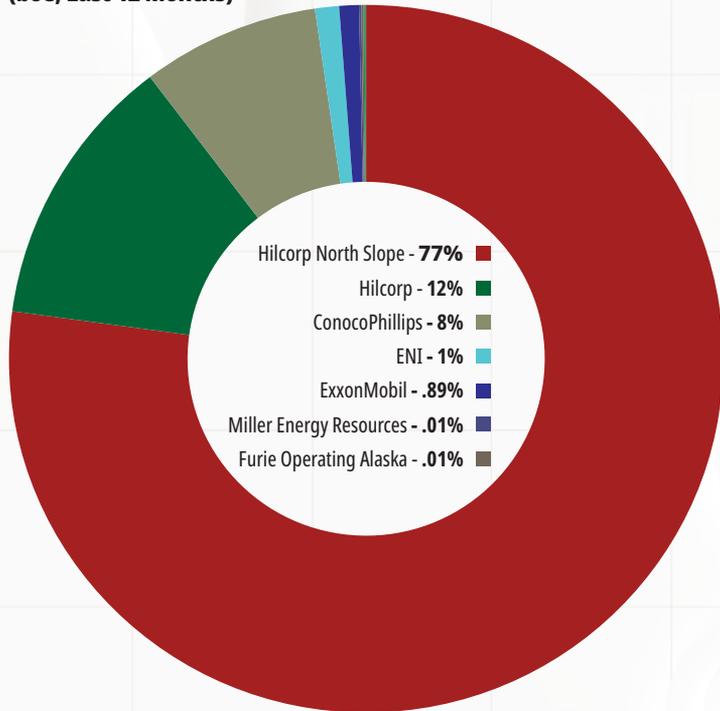
**P**roduction of natural gas exceeds production of crude oil in Alaska and has for the past 27 years. However, it is oil that provides more than two-thirds of the state's budget—critical for a state without income or sales taxes.

Oil production on the North Slope peaked in 1988 at about 2 MMbbl/d and dropped below 440,000 bbl/d in 2021. That reduction has increased the travel time of crude on the Trans-Alaska Pipeline System to the port of Valdez to 18 days in 2020 from 4.5 days in 1988, according to the U.S. Energy Information Administration (EIA).

Alaskans consume more energy per capita than any other state except Louisiana, the EIA has reported. The state also trails only Delaware in percentage of energy derived from fossil fuels at 95.9%, according to a Commodity.com analysis of EIA data. Alaska has the third-highest per capita demand for petroleum among U.S. states and uses more petroleum for electricity generation than any state other than Hawaii, according to the EIA.

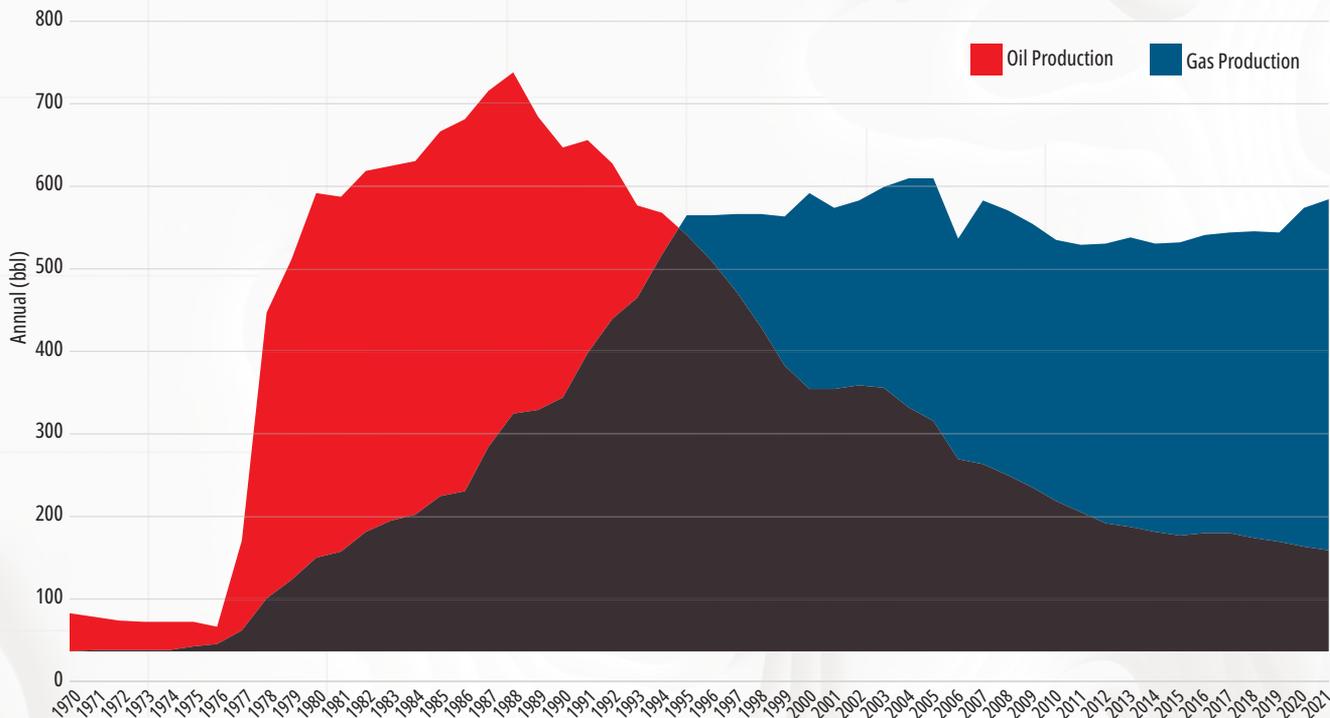
The U.S. Geological Survey estimates the Arctic National Wildlife Refuge (ANWR) to hold about 10.4 Bbbl of crude oil. However, the Biden administration has imposed a temporary moratorium on federal oil and gas leasing in ANWR.

**Leading Alaska Producers Of Oil And Gas By Market Share (boe, Last 12 Months)**



Data from Rextag ENERGY DATALINK

## Alaskan Oil Vs. Gas Production



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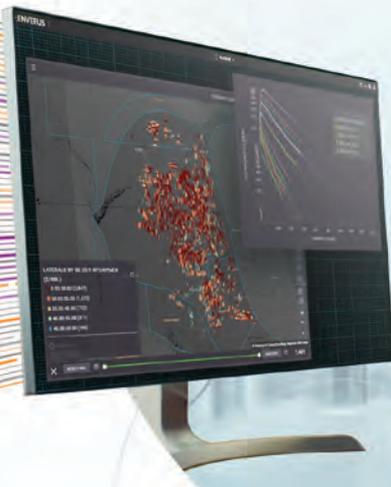
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# A&D WATCH

## WITH PERMIAN M&A COOLING, WILL OTHER BASINS CATCH COLD?



EDITED BY  
DARREN BARBEE

**T**he Permian Basin remains firmly in control of the Lower 48, with **Enverus** describing it as the deal engine of domestic M&A transactions. But it is not invulnerable.

Signs show that even the Permian Basin, facing the same death of a thousand cuts as other basins, may be cooling off. Particularly in the face of commodity price fluctuations, inflation, supply chain crimps and now recession fears, the Permian Basin's flagging deal flow may have implications beyond Texas and New Mexico.

The basin saw at least two new deals announced in August earnings. **APA Corp.** disclosed on Aug. 3 a tuck-in acquisition in July of properties primarily located in Loving and Reeves counties, Texas, near the company's active development areas in the Delaware Basin. The acquired properties

have a combination of producing wells, ones in the process of drilling and completion and an inventory of undrilled locations.

The company expects production will average 12,000 boe/d to 14,000 boe/d for the remaining five months of the year. APA said it agreed to purchase the assets for \$505 million, with adjustments bringing the final price to \$555 million.

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

While the Permian Basin remains a bastion of dealmaking, it has also endured longer than usual droughts of late. The last announced major E&P deal was a July 5 acquisition by **Ring Energy Inc.** to buy Stronghold Energy, a privately held operator backed by **Warburg Pincus LLC**. The agreement will pay Stronghold up to \$465 million for assets in the Central Basin Platform, where its operations are focused on the development of about 37,000 net acres located primarily in Crane County, Texas.

In June, **Mercer Capital** senior financial analyst Justin J. F. Ramirez pointed to the slow drip in Permian deals. Through the first six months of the year, Mercer counted 21 transactions in the past 12 months, six fewer than the same period that ended in 2021.

Not much has changed since then, with only Ring Energy's deal having made any ripples in the Permian's pond.

Notably, the Permian Basin continues to be an area clearly scrutinized.

At least six acreage packages have been offered in the basin since June. And, in late June, **Sitio Royalties Corp.** disclosed two acquisitions in the Permian Basin worth a combined \$547 million as the company pursues a consolidation of large-scale mineral and royalty positions. In July, **Canada's Freehold Royalties Ltd.** also entered into separate agreements with two private sellers to acquire interests located in the Permian and Eagle Ford Shale. The Canadian firm said the Permian deals totaled CAS 123 million, or roughly US\$96 million.

Ramirez was circumspect about what the Permian's dribbling deal flow might mean if it meant anything at all.

"It is difficult to interpret the significance with any certainty," Ramirez wrote in June. "On one hand, it could indicate increased trepidation regarding production prospects

## Recent Permian Basin Transactions

Buyer	Seller	Counties	Value (\$MM)	\$/Adj. Net Acres	\$/boe/d
Freehold Royalties	Unidisclosed	Howard	\$94	\$87,782	\$171,491
Ring Energy	Stronghold Energy II	Crane	\$465	\$12,568	\$51,099
Earthstone Energy	Titus Oil & Gas	Eddy, Lea	\$627	\$79,367	\$30,585
Sitio Royalties	Foundation Minerals, Momentum Minerals	Andrews, Borden, Crane	\$547	\$82,078	\$156,286
Centennial	Colgate	Eddy, Lea, Reeves, Ward, Winkler	\$3,942	\$3,942	\$56,314
HighPeak Energy	Hannathon Petroleum, Undisclosed	Howard	\$373	\$7,617	\$74,600
HighPeak Energy	Undisclosed	Borden, Howard	\$161	\$4,163	\$64,400
Earthstone Energy	Bighorn Permian Resources	Crockett, Irion, Reagan, Upton	\$860	N/A	\$20,283
Maverick Natural Resources	ConocoPhillips	Andrews, Ector, Eddy, Lea	\$440	\$381	\$40,000
Split Rock Resources	RSC Resources	Eddy, Lea, Glasscock	\$98	\$23,750	\$49,000
Earthstone Energy	Chisholm Energy	Eddy, Lea	\$604	\$4,346	\$44,741
Northern Oil & Gas	Veritas Energy	Eddy, Lea, Reaves	\$407	\$12,520	\$35,391
Colgate Operating	Occidental Petroleum	Eddy, Lea	\$190	\$7,560	\$253,333

Source: Raymond James

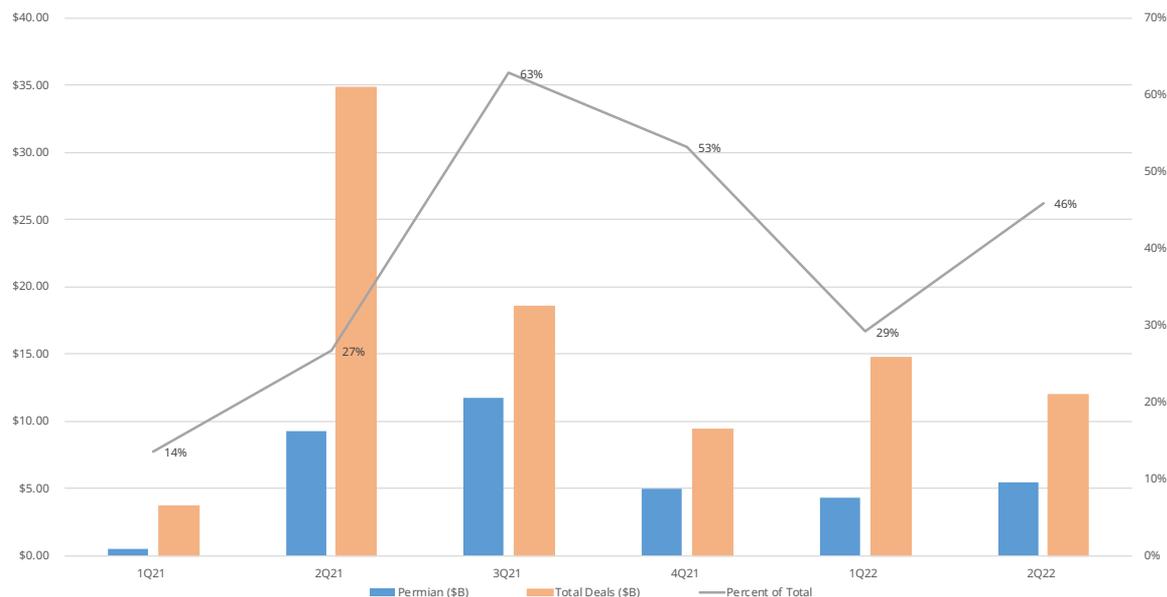
in the basin. On the other hand, it could simply be a sign that regional E&P operators have started to 'right-size' their inventories in the West Texas and Southeast New Mexico basin."

### 'Bang for their buck'

The basin usually defies expectations and funding for deals remains strong.

In mid-June, **Double Eagle Energy** launched a new venture to aggressively pursue "very large acquisitions" in the Permian Basin with a wallet stuffed with \$1.7 billion in equity commitments.

## Permian's Share Of Total Deals Since 1Q21



Source: Enverus

The funding is part of a strategic partnership among Double Eagle and **EnCap Investments LP** to form **Double Eagle Energy Holdings IV LLC** and **Tumbleweed Royalty IV LLC**. The new entities also received minority investments from **Apollo Global Management LLC**, **Magnetar Capital** and other strategic institutional partners.

While Enverus reported in July that the Permian Basin generated about 46% of the second-quarter's deal value in the U.S. market, deal values have also shown declines.

The median deal size was \$387 million, about 4% lower than the median deal size of \$405 million in the prior 12-month period, Mercer's Ramirez said. The median acreage purchased also diminished, with 21,000 net acres in the past year 42% lower than the 36,250 acres among the deals in the previous year.

"Given the concurrent decrease in acquired acreage and relatively unchanged median transaction price, the median price per net acre was up 16% period-over-period," Ramirez said. "Looking at acquired production, the median production among transactions over the past year was 5,500 boe/d, a 39% decrease from the 8,950 boe/d metric from the prior year."

The resulting picture is that the Permian Basin remains highly priced since the median transaction value remained relatively unchanged despite buyers' acquiring a lower median production level. The median transaction value per boe/d jumped 54% from \$31,886 in the prior 12-month period to \$49,143 in the latest 12-month period, Ramirez said.

"This willingness to pay over 50% more per acre and/or per boe/d suggests that these targets' underlying economics have been, and remain, supportive," he said. "However, the

marginal costs of these acquisitions may be approaching the perceived marginal returns projected for these properties, as evidenced by the decrease in the transaction count relative to last year."

Ramirez said one metric Mercer analyzed was deal value per production acre, annualized. The analysis of 21 transactions for the second half of 2021 versus the first half of 2022 showed a sharp decline in buyers' ability to get a "bang for their buck" based on median cost per production.

In the 14 deals transacted from June 2021 through December 2021, the median cost per production acre was \$1,072. In the seven deals from January to June, the median skyrocketed to \$10.76—a 10x increase in cost per production acre.

"The approach to the marginal 'equilibrium' appears to have been a pretty short runway to land on," Ramirez wrote.

More broadly, as energy prices have risen over the past year, he said it's likely a slowdown in the Permian, generally considered the most economic oil and gas basin, is underway.

"If the Permian is a bellwether of U.S. production in general, are we likely to see a slowdown in M&A activity in other basins soon? I would venture to say yes," he said.

—Darren Barbee

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# APA UNVEILS \$555 MILLION PERMIAN ‘TUCK-IN’

**A**PA Corp. unveiled a \$550 million acquisition in the Permian Basin in its earnings release on Aug. 3 where the Houston-based company reported second-quarter profits that nearly tripled.

**Apache Corp.**, a subsidiary of APA, entered into a transaction during the second quarter to acquire properties in the Texas Delaware Basin. The properties, primarily in Loving and Reeves counties, Texas, are located near its existing operations, referred to as a “tuck-in acquisition” in APA’s investor presentation.

The purchase price was \$505 million, with the transaction closing on July 29 for a total cost of \$555 million after post-effective date adjustments.

Neil Mehta, an analyst at **Goldman Sachs**, said that APA’s adjusted production guidance was lowered due to operational delays and negative production sharing contracts that were partially offset by higher production associated with the Delaware acquisition.

APA didn’t disclose the seller but earlier on Aug. 3, Reuters reported that the company was buying assets in Texas from privately owned **Titus Oil & Gas**.

Based in Fort Worth, Texas, Titus is a Delaware Basin E&P company backed by **NGP Energy Capital Management LLC**. Titus is actively pursuing operated and nonoperated working interests, overriding royalties and leasing opportunities in the Delaware Basin using a geologic and land-driven approach, according to its website.



In late June, **Earthstone Energy** announced an agreement to acquire the New Mexico Delaware Basin assets of Titus Oil & Gas for \$627 million.

In its release on Aug. 3, APA said the acquired Texas Delaware Basin properties have a combination of producing wells, wells in the process of drilling and completion, and an inventory of undrilled locations.

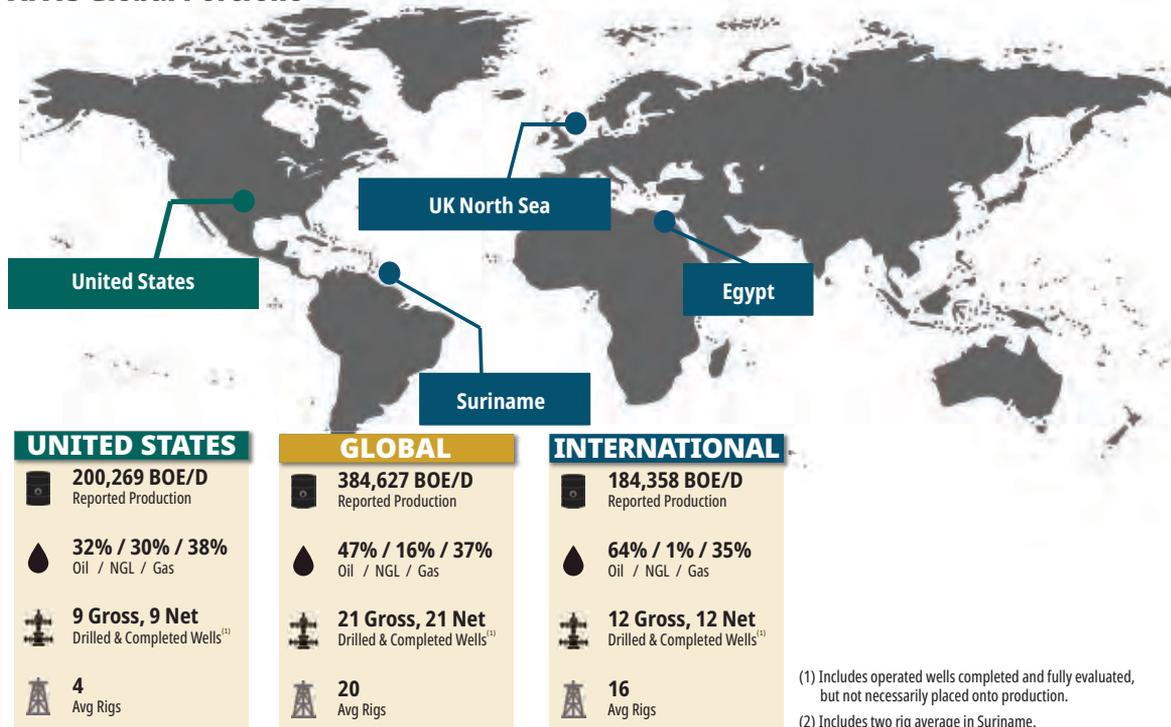
“The acquisition also brings immediate access to a high-quality drilling rig and experienced crew for ongoing development,” the company added.

APA said it expects production will average 12,000 boe/d to 14,000 boe/d for the remaining five months of the year.

APA on Aug. 3 also posted adjusted earnings of \$2.37, beating analysts’ estimates of \$2.33 per share, according to **Refinitiv** data in a Reuters report.

—Emily Patsy

## APA’s Global Portfolio



Source: APA Corp.

## DIVERSIFIED ENERGY ACQUIRES CONOCOPHILLIPS' MIDCON ASSETS

**D**iversified Energy Co. Plc agreed to acquire Midcontinent assets from **ConocoPhillips Co.** for \$240 million, further bolstering Diversified's central regional focus area.

"Building on our success in Appalachia, we are excited to increase our holdings within the central region that position us to drive greater synergies and unlock additional shareholder value through scale," Diversified CEO Rusty Hutson Jr. said in a July 28 press release.

The acquisition, which includes an interest in roughly 1,500 producing wells in Oklahoma and Texas, represents Diversified's sixth major acquisition within the central region and its second in the Midcontinent.

Headquartered in Birmingham, Ala., and listed on the London Stock Exchange, Diversified's business model focuses on buying high-margin, low-decline producing assets. Until an acquisition of Cotton Valley assets in Louisiana in May 2021, the company had focused exclusively in the Appalachian Basin.

However, since the initial Louisiana purchase last year, Diversified has continued to add to its central region portfolio with additional acquisitions in the Haynesville and Barnett shale plays. In late 2021, Diversified expanded its central region footprint further through the acquisition of Oklahoma operator **Tapstone Energy LLC**, which gave the company a stronghold in the Midcontinent region.

Diversified has also been acquiring well services businesses including the acquisition of **Contractor Services Inc.** (ConServ) of West Virginia announced July 27. The ConServ deal marked the third Appalachia plugging company Diversified had acquired so far in 2022.

In a company release on July 28, Diversified said it had signed a purchase and sale agreement with ConocoPhillips on July 27 to acquire Oklahoma and Texas assets for a purchase price of \$240 million. The ConocoPhillips assets include 60% operated production across 250,000 net acres.

Net production of the ConocoPhillips assets is about 9,000 boe/d including 52 MMcfe/d comprising 90% natural



Rusty Hutson

gas and NGL. With an effective date of June 1, the ConocoPhillips acquisition also adds about 31 MMboe (186 Bcfe) of net PDP reserves, with a PV-10 of roughly \$297 million, using Ny-mex strip pricing as of July 25.

The proximity of the ConocoPhillips assets, according to Diversified, to its previously acquired Tapstone assets "creates further potential to develop operational synergies of scale in the central region

and benefits from a constructive regulatory environment."

The estimated acquisition cost due at closing is about \$210 million, which the company said reflects the estimated customary purchase price adjustments through the close date, anticipated in late September. It also represents a roughly 2.5x acquisition price multiple before any anticipated synergies, the company added.

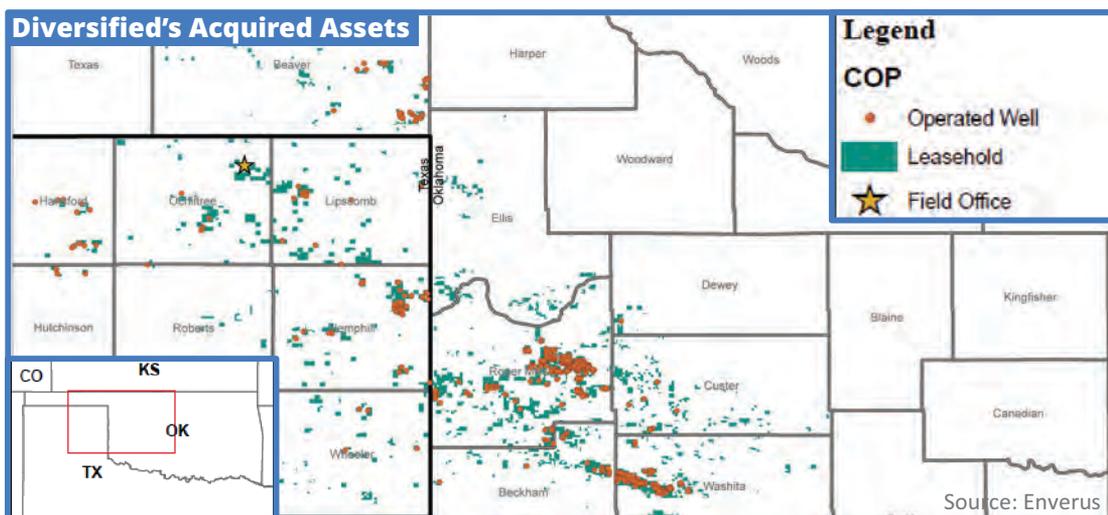
Diversified plans to finance the acquisition with cash on hand and existing availability on its revolving credit facility. After funding the acquisition, approximately 95% of the company's borrowings will exist in fixed-rate, fully amortizing and predominantly investment grade rated notes that benefit from hedge-protected cash flows.

"Financed entirely with existing liquidity," Hutson added, "this non-dilutive acquisition represents a compelling opportunity to further scale our central region portfolio while maintaining a strong balance sheet."

Diversified projects its post-acquisition funding liquidity at \$250 million before any increase in the company's revolving credit facility borrowing base for the additional collateral from the acquisition.

Consistent with its asset acquisition strategy, Diversified intends to retain certain ConocoPhillips company experienced personnel who will complement Diversified's asset stewardship operating philosophy designed to improve well performance, enhance margins and lower emissions, according to the release.

—Emily Patsy



Source: Diversified Energy Co. Plc; Enverus

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# TELLURIAN ACQUIRES PRIVATE HAYNESVILLE E&P ENSIGHT

**T**ellurian Inc. is acquiring natural gas assets located in the Haynesville Shale from privately held **EnSight Energy Partners LP** for \$125 million plus a contingent payment tied to the price of natural gas.

"We have been diligently growing our natural gas production and reserves in the Haynesville," commented John Howie, president of **Tellurian Production LLC**, in a company press release.

A subsidiary of the Houston-based LNG developer, Tellurian Production agreed to pay up to \$132.5 million to purchase the natural gas assets from **EnSight IV Energy Partners LLC** and **EnSight Haynesville Partners LLC**. The assets are located in the core of the Haynesville Shale in DeSoto, Bossier, Caddo and Webster parishes in Louisiana.

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

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

"Tellurian continues to focus on two critical pathways—progressing Driftwood LNG and continuing to increase our upstream footprint," Tellurian president and CEO Octávio Simões noted in the release.

Simões said the EnSight transaction grows Tellurian's 2023 estimated natural gas production by roughly 30%, increases upstream asset-level EBITDA by about 25% and expands upon the company's existing platform. The EnSight assets also provide Tellurian with both cash flow and a physical hedge for Driftwood LNG, Howie added.

"The EnSight asset is a great fit with Tellurian's existing position in the Haynesville Shale and allows us to step into an ongoing development program and bring online significant additional natural gas volumes in the fourth quarter of 2022," Howie said.

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

The acquisition is also projected to grow pro forma net production for 2022 to roughly 140 MMcf/d, from 39 MMcf/d in 2021.

EnSight is currently operating a one-rig drilling program, which Tellurian plans to maintain on the acquired assets through the fourth quarter. The company then plans to add a rig to run a two-rig drilling program in 2023 with approximately 350 MMcf/d of net production.

The effective date of the EnSight transaction is Aug. 1. The purchase price is \$125 million and a contingent payment of \$7.5 million which is based on the price of natural gas and may be payable in March 2023 under certain conditions.

Tellurian said it will fund the EnSight purchase with cash on hand.

—Hart Energy Staff

## OCCIDENTAL PETROLEUM EXTENDS PERMIAN JV THROUGH 2025

**O**ccidental Petroleum Corp. will extend its joint venture (JV) in the Permian Basin with Colombia's **Ecopetrol SA** through the first quarter of 2015, with the Colombian company earning additional interest in the Delaware Basin.

Occidental president and CEO Vicki Hollub said on the company's second-quarter earnings call on Aug. 3 that the two companies would enhance their JV in the Midland and Delaware basins to encompass 20,000 net acres. The Houston-based independent E&P also reported a record \$4.2 billion in free cash flow for the quarter.

The Ecopetrol JV includes 17,000 acres in the Texas Delaware Basin that Hollub said would utilize Occidental's infrastructure. In the Midland Basin, "Oxy will benefit from the opportunity to continue development with an extension to the capital carried through the end of this agreement in the first quarter of 2025."

The JV has worked "exceptionally well for both parties, with Oxy benefiting from incremental production and cash flow from the Midland Basin with minimal investment," she said. "We are fortunate to collaborate with a partner who has extensive expertise and with whom we share a long-term vision."

In the Delaware Basin, Occidental has the option to bring forward the development of high-quality acreage that was planned further out in its development plans, while benefiting from an additional capital carry of up to 75%. In exchange for the carried capital, Ecopetrol will earn a percentage of the working interest in the JV asset.

The initial JV, which was announced in July 2019, was valued at up to \$1.5 billion. By September 2020, despite a severe downturn in commodity prices at the time, Ecopetrol planned to drill a total of 100 Permian Basin wells by the end of 2021.

Overall, Occidental's earnings were viewed as positive by analysts, who noted record free cash flow of \$4.18 billion. Hollub said the company remains focused on reducing debt before increasing cash to shareholders.

"At the beginning of this year, we established a near-term goal of repaying an additional \$5 billion of debt, before further increasing the amount of cash allocated to shareholder returns," she said. "The debt we completed in May brought the total debt repaid this year to over \$8 billion, surpassing our target at a quicker pace than we had originally anticipated."

Year-to-date, Occidental has repaid about \$8.1 billion of its debt, including \$4.8 billion in the second quarter, exceeding near-term goals of repaying \$5 billion in principal this year.

John Freeman, an analyst at **Raymond James**, said that, as of Aug. 1, Occidental had repurchased more than 18 million shares for about \$1.18 billion. The company also paid down nearly \$5 billion in debt, bringing its net debt below \$20 billion as it closes in on its target.

"Despite reiterating 2022 capital spend (\$3.9 billion to \$4.3 billion, we're leaning toward higher end), Oxy upped Permian capex \$200 million (to \$1.9 billion-\$2.1 billion), citing increased cost inflation (half the driver) and higher 2H22 activity



Vicki Hollub

(other half, but minimal effect on 2022 production)," Freeman wrote in an Aug. 3 report.

**Goldman Sachs** analyst Neil Mehta said that Occidental's cash flow missed its expectations but reported capex of \$972 million for the second quarter, which was below its estimate of \$1.16 billion.

"Given the company has accomplished its near-term net debt targets, the focus for the

company is now on incremental capital returns consideration (~\$1.1 billion of \$3 billion in share repurchase program has been deployed YTD)," he said. "In the medium term, Oxy plans to reduce its gross debt to the 'high-teens' in order to achieve investment grade credit ratings."

Ryan M. Todd, a senior research analyst at **Piper Sandler**, said in an Aug. 2 commentary that Occidental's oil and gas results were weaker than expected. Todd noted that reported adjusted earnings before taxes were \$4.89 billion versus Piper Sandler's estimates of \$5.05 billion.

Permian production (493,000 boe/d) was at the midpoint of the guidance range, with fiscal-year 2022 lowered from 527,000 boe/d-537,000 boe/d to 516,000 boe/d-526,000 boe/d. However, fiscal-year 2022 total production guidance remains unchanged, aided by increased production guidance from the Gulf of Mexico, Rockies and other areas.

"While FY22 production guidance of 1,140 to 1,170 kboe/d was unchanged versus prior guidance, the trajectory is likely to be more backend loaded than previously expected (stronger 2023 trajectory), as 3Q22 production guidance of 1,140 to 1,170 kboe/d is below Street expectations (1,182 kboe/d)," Todd wrote.

David Deckelbaum, an analyst at **Cowen**, said that overall Occidental is a "unique standout amongst E&P names in 2Q22 as capex was left unchanged."

"We see Oxy in an improved position as a strong commodity environment lifts cash flows and leverage comes down. We see Oxy accumulating FCF [free cash flow] as it pursues disciplined growth, returns cash to shareholders and continues to de-lever," Deckelbaum said.

He noted that Occidental's Low Carbon Venture will also become increasingly important to the "Oxy story" as time goes on.

—Darren Barbee

### Occidental Q3 Oil & Gas Production Guidance (Mboe/d)

Total company	1,140 - 1,170
Permian Basin	523 - 533
Rockies & Other	260 - 268
Gulf of Mexico	127 - 133
International	230 - 236

Source: Occidental Petroleum Corp.

# BRIGHAM MINERALS STEPS UP PERMIAN GROUND GAME

**B**righam Minerals Inc. is exploring options that include a sale or a merger, people familiar with the matter said on Aug. 3, but during an earnings call Aug. 4, Brigham CEO Rob Roosa said the company wouldn't comment on "rumors or speculation."

Roosa disclosed an active A&D campaign in the second quarter.

"Our team was able to divest Oklahoma assets, generating a mid-teens next 12 months cash flow multiple, and will redeploy those proceeds into immediately cash-flow generating Permian Basin assets at six times next 12 months cash flow multiple, while reducing our debt balance, which will provide runway for future accretive acquisitions and our return of capital program," he said.

In the second quarter, Brigham sold largely undeveloped mineral interests in the Anadarko Basin for net proceeds of \$67.3 million, "our largest single asset divestiture to date," Roosa said.

The assets were anticipated to produce 200 boe/d in third-quarter 2022.

Brigham partially redeployed the proceeds into debt reduction and its acquisition ground game in the Permian.

Deals valued at \$33.2 million added 885 net royalty acres in the Permian, with 95% of capital paying for PDP, DUC and permitted net locations with anticipated third-quarter 2022 production of 400 boe/d.

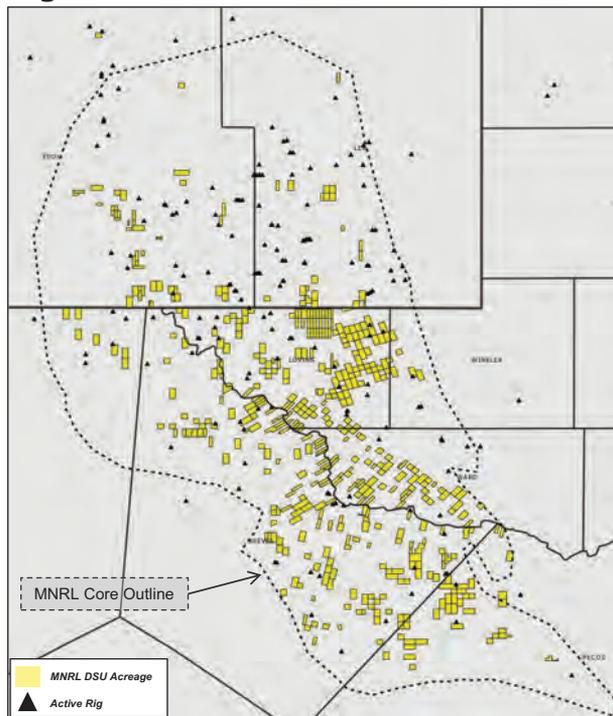
The locations will be "converted" by operators including **Endeavor Energy Resources, Chevron Corp.** and **Marathon Oil Corp.** Roosa said the Anadarko sale also enabled the company to reduce its net debt to \$49 million at the end of June, a 44% reduction compared to the \$87 million owed at the end of March.

On March 31, the company completed a previously announced acquisition of about 1,800 net royalty acres in the Midland Basin, which are largely operated by **Pioneer Natural Resources Co.** and Endeavor Energy, for \$34.8 million. The transaction consisted of \$14.4 million in cash, net of \$600,000 in customary closing adjustments, and 800,000 shares of the company's Class A common stock valued at \$20.4 million.

Brigham's shares have risen more than 20% this year as it benefited from elevated energy prices, prompting founder and CEO Bud Brigham to consider a sale, Reuters reported.

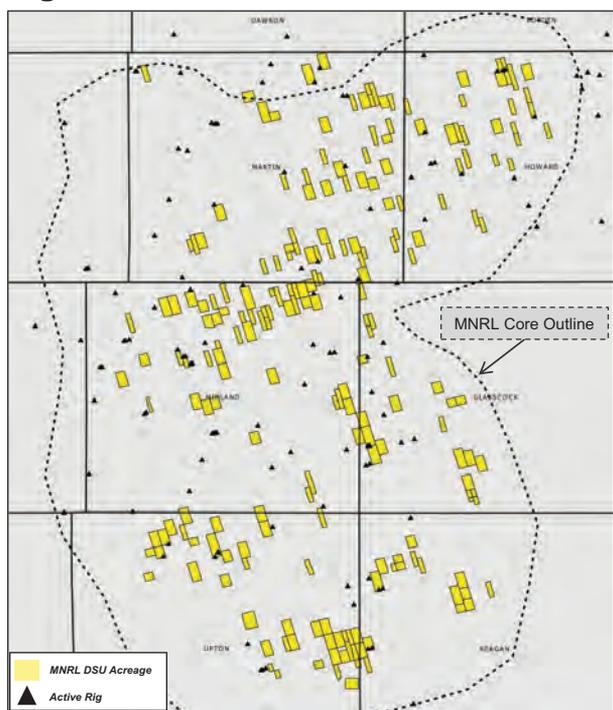
The company, based in Austin, Texas, has a market cap of about \$1.6 billion and is working with an investment bank as it evaluates its strategic alternatives, the sources added, cautioning that no deal is certain.

## Brigham Minerals Delaware Basin Overview



Note: Asset data as of June 30, 2022.  
Source: Public data, Enverus, IHS Markit.

## Brigham Minerals Midland Basin Overview



Note: Asset data as of June 30, 2022.  
Source: Public data, Enverus, IHS Markit.

Brigham owns mineral and royalty rights in four U.S. shale basins, with around two-thirds of its acreage in the Permian along with the Denver-Julesburg Basin. The company was listed on the stock market in 2019.

—Darren Barbee

## ORION DIVERSIFIED ADDS HUGOTON FIELD INTERESTS

**O**rion Diversified Holding Co. Inc., a company that trades on over-the-counter public markets, said in July it had acquired Hugoton Field assets in Kansas for an undisclosed sum.

The acquired royalty interest in Hugoton Field is located on 160 acres in Greeley County, Kan., in the southwest corner of the state, with a 1.56% royalty interest, according to a release from the Nevada-based company.

In the release, Orion said it owns mineral interests in more than 21,000 acres in the Bakken, Permian, Powder River and Hugoton basins as well as the Haynesville, Niobrara and Eagle Ford shales. More than 3,200 acres are being operated by Orion in the Eagle Ford and Permian Basin with more than 70% net revenue interest.

Texas Railroad Commission records of active operators do not show any listing for Orion Diversified, though they may operate through subsidiaries. However, the company listed no subsidiaries in filings with the U.S. Securities and Exchange Commission in August 2021.

A request for comment to Orion's CEO, Thomas Lull, was not immediately returned.

In the release dated July 7, Lull said the new acquisition in Kansas has existing producing oil and gas wells, and several companies have taken new leases for drilling.

"This is our first acquisition in Kansas and the Hugoton gas field is a prolific producer of natural gas and oil," he said. "Tak-

ing a lease for a future drillsite means significant amounts of capital have been spent before the drill bit touches the ground. This property in Kansas already has eight new leases near our property ready to drill."

Orion Diversified describes its primary strategy as investing in operated majority working interest, nonoperated working interest and mineral interests in oil and gas properties focused largely in premier U.S. basins.

As of December 2021, Orion Diversified listed its operations as including the Eagle Ford and Bakken.

In the Eagle Ford, the company said it held:

- 1,680 acres in McMullen County, Texas, with 100% working interest, about 70% net revenue interest and average production of 131 Mcf/d of gas and 3 bbl/d of oil; and
- The leasehold is held by three producing vertical oil and gas wells that allows for future infill horizontal well development.

In the Bakken, the company said it held 386 acres in a 1,280-acre pooled unit in Sheridan County, Mont., 29.21% nonoperated working interest and 23.09% net revenue interest.

—Darren Barbee

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## GOM

**Shell Plc** and **ConocoPhillips Co.** are both reportedly exploring the divestiture of assets in the U.S. Gulf of Mexico (GoM), according to separate media reports on July 20.

Shell is said to have begun soliciting buyer interest for its stakes in two U.S. GoM oil and gas developments, the Auger hub and Conger Field. Meanwhile, ConocoPhillips is considering a full exit from its GoM deepwater portfolio through the sale of the Ursa platform and Princess subsea well.

Both companies have been off-loading assets—Shell, due to investor pressure to focus on cleaner forms of energy, and ConocoPhillips to become a major operator in the Permian Basin. Despite the pressure, Shell acquired an operating stake in a deepwater development project in the GoM that France's **TotalEnergies SE** had previously abandoned.

Still, Reuters reported on July 20, citing three unnamed sources, that Shell hired an investment bank to run an auction process of the Auger hub and its 37.5% stake in the **Hess Corp.**-operated Conger Field.

The London-based company is targeting a valuation of around \$1.5 billion from the sale. The assets have a combined output of around 50,000 bbl/d, the Reuters report said two of the sources added.

Reuters also reported that ConocoPhillips retained a financial adviser to sell its 15.9% holding in the Ursa/Princess development, which is likely to be valued in the high hundreds of millions of dollars, according to the report citing two unnamed sources.

ConocoPhillips' net production from the Ursa/Princess development averaged 13,700 boe/d in 2021, according to its website. Shell is the operator, with **bp Plc** and **Exxon Mobil Corp.** holding minority stakes.

In both reports, Reuters noted that the sources cautioned that no deal was guaranteed. They spoke on condition of anonymity to discuss confidential information.

## WILLISTON BASIN

**Devon Energy Corp.** wrapped up its purchase of **RimRock Oil and Gas LP** on July 21, described by Devon as a "bolt-on" acquisition in the Williston Basin.

Oklahoma City-based Devon had entered into a definitive purchase agreement to acquire the leasehold interest and related assets of RimRock, a **Warburg Pincus** portfolio company in the Williston Basin, for cash consideration of \$865 million in early June.

The RimRock bolt-on acquisition adds a contiguous position of 38,000 net acres (88% working interest) directly offsetting and overlapping Devon's existing position. Production from the acquired assets is expected to increase to an average of 20,000 boe/d over the next year.

Further, by adding more than 100 highly economic undrilled inventory locations, Devon said the transaction positions the company's Williston Basin assets to maintain high-margin production and strong cash flow for several years.

On June 8, when the acquisition was announced, Devon said its board intended to approve a 13% increase to the fixed quarterly dividend following the closing of the transaction due to its accretive nature to free cash flow.

"RimRock's directly adjacent acreage offers strong operational synergies, adds to our high-quality inventory in the core of the play and positions us to further increase the return of cash to shareholders," Rick Muncrief, Devon's president and CEO, added in the June 8 release.

RimRock Oil and Gas was founded and led by industry veteran Jim Fraser. At the time of RimRock's launch in 2016, the company received a line-of-equity investment of up to \$500 million from Warburg Pincus.

## LOWER 48

Two deals valued at \$863 million, announced in May by energy marketplace **Beachwood Helix Corp.**, have been scuttled, Beachwood president and founder Joshua Robbins said.

On July 18, Robbins said one of the deals did not close as planned because the investors behind the oil company "backed out of the deal, terminating over eight months' worth of effort and hard work to get this closed."

Robbins added it was "heartbreaking to receive commitments from multiple oil companies only to have the deals fall apart as investors/boards make short-term decisions on long-term assets. This has been a tough month to work through."

On July 5, Robbins told Hart Energy that the first transaction did not close

as planned because "the oil and gas firm could not secure funding for the purchase."

Beachwood Helix said its two major transactions were expected to close by July 1.

Robbins said the details for the deal were available for other users of the firm's Helix marketplace platform to view. The assets of both deals are located in the Lower 48.

## SERVICE & SUPPLY

**Precision Drilling Corp.** entered an asset purchase agreement to acquire **High Arctic Services Inc.**'s well servicing business and associated rentals assets, according to a Precision press release on July 18.

The transaction, subject to customary commercial closing conditions, sold for an aggregate purchase price of \$38.2 million in cash, with an initial \$10.2 million due at closing and the remaining balance due January 2023.

With the transaction expected to close before the end of this month, **CIBC Capital Markets** is serving as Precision's exclusive financial advisor, and **Torys LLP** is serving as Precision's legal adviser.

"With the expected synergies and further leveraging our scale, we believe this transaction provides accretive earnings and significant cash generation potential supporting our debt-reduction strategy and our short-term and long-term debt reduction targets of \$75 million in 2022 and \$400 million between 2022 and 2025," Precision president and CEO Kevin Neveu commented in the release.

The acquisition will add 80 service rigs—51 marketed and 29 inactive—to Precision's well servicing operation in Canada for a combined marketing fleet of 134 service rigs, as well as rental assets, ancillary support equipment, inventories and spares and six additional operating facilities in key basins.

Additionally, Precision will receive High Arctic's high-quality assets, along with its experienced field personnel and customer following. Upon the implementation of the assets, Precision is expected to generate annual operating cost savings of \$5 million annually.

Calgary-based Precision is a service company focused on providing oil and gas customers with safe and environmentally friendly solutions, as well as access to its extensive fleet of Super Series drilling rigs.

# PUBLIC PRODUCERS STRUGGLE DESPITE STRATEGIC SHIFT



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*David Deckelbaum is the managing director for sustainability and energy transition at Cowen Inc. and based in New York City.*

**P**ublic E&P companies are entering a period of existential struggle. The group is approximately eight quarters into a strategic shift to generate free cash flow and maintain production volumes at relatively flat levels after repeated investor criticism around prior destruction of capital.

In the 10 years preceding this shift, the XOP Index, which tracks the stock performance of oil and gas E&P companies listed on the S&P 500, trailed the S&P 500 by 230% cumulatively.

Since that time, performance has indeed reversed, and the XOP has outperformed the S&P 500 by 114% as restraints on supply growth are juxtaposed against COVID-reopening demand growth and geo-political tensions that have contributed to oil prices breaking out of a five-year prior average price of ~\$40/bbl to now looking forward into a two-year average futures price of just north of \$80/bbl.

Despite the share performance and improvement in commodity prices, political headwinds and social licenses to operate have served as sources of frustration for several E&P executives, and deviations from current strategies have been met with investor backlash.

As a result, pursuits of M&A are now minimal—let alone rig additions—and the ability to create differentiation becomes increasingly more challenging. Corporate public-private dynamics have shifted dramatically with private operators now dominating a 60% market share of the rig count as they have added 362 rigs since the lows of mid-2020 versus public companies that have added just 149 rigs, in part due to consolidation.

For now, the investing public is not paying for re-source; they are paying for near-term cash flows, making it even more challenging for private operators that are growing to effectively monetize through public vehicles, despite compelling economics of operating oil and gas assets as cash payback periods in some of the better plays have compressed to just six months.

While the playbook is certainly different from past E&P strategies that sought to create value through efficiently developing emerging assets, the playbook is still relatively new.

Certainly, strategic options are more limited than in the past, but we calculate that our E&P coverage universe of 24 names will earn their entire enterprise value in generated free cash by mid-2030 and will earn 64% of current EV by the end of 2026. Further, over two-thirds of our coverage universe has adopted explicit return of capital programs that range from 25% to 80% of generated free

## Market Watchers

cash to be paid out to investors via buybacks and dividends.

When looking into 2023, these payout

levels would imply 12% average payout yields, almost triple the rate of dividend yields on S&P 500 blue chip companies and 10 times the overall dividend yield average within the S&P 500.

In early June, Continental Resources Inc. received an offer from its founder's family, Harold Hamm, to go private at \$70 per share, an 8% premium at the time to prior share prices. Hamm shared in an email to employees that he observed a lack of support for public E&Ps and that the public structure created limitations on the company's freedom to operate. The Hamm family already owns 83% of shares, creating a fairly unique situation but likely acknowledging a common existential struggle that most public E&P executives feel.

The industry will end 2023 in a net cash position, and maintenance programs create a lesser burden on inventory depletion. E&Ps do not need the public markets per se, but the broader public still needs them.

We anticipate that energy security will become an emerging theme in the coming years against a backdrop of deglobalization and supply chain constraints, along with perhaps a greater appreciation of fossil fuels' role in the energy transition.

There can indeed become a bifurcated world in which private E&Ps serve a materially different purpose than publics, and we would argue that ultimately the calculus of free cash generated relative to enterprise values, when performed consistently over time, can either earn greater appreciation from investors or benefit from capitulation to outsized free cash yields.

While E&P management teams may not enjoy multiple strategic freedoms, they do enjoy the freedom of self-reliance, an existence that is still emerging and creates continued opportunity. 

**“I’m hopeful this [Inflation Reduction Act of 2022 package] will also help fund non-traditional partnerships in areas that we haven’t seen before.”**

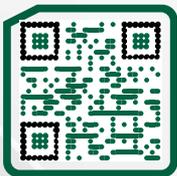
Read the article:



—**Angie Gildea**,  
*KPMG U.S. energy, natural resources and chemicals leader, in a meeting with members of the press, discussing a wide range of energy topics.*

**“That really is ESG investor pressure that’s saying, ‘We’re not going to grow.’ The reality is they’re just not adding that back, and that is contributing to the energy problem that we have and not having enough output.”**

Read the article:



—**Trisha Curtis**,  
*PetroNerds LLC, during a DUG Bakken panel, discussing how public companies have lagged due to external forces, particularly ESG and capital discipline.*

Chevron Corp. named **Alana K. Knowles** as vice president and controller, succeeding **David A. Inchausti**, who is expected to retire from the company after 35 years of service.

Currently vice president of finance, downstream and chemicals and midstream, Knowles began her career with Chevron in 1988, supporting North America upstream in an accounting and finance capacity. She advanced to positions of increasing responsibility, including manager of the money markets group in corporate treasury, finance manager at the Richmond refinery, manager of investor relations, vice-president of finance at Chevron gas and midstream, comptroller for global downstream and chemicals and assistant treasurer of OpCo financing.

In her new role, effective March 1, 2023, Knowles will lead Chevron’s accounting policy and external reporting, financial reporting and analysis, internal controls and digital finance organizations.

Accounting firm EY appointed **Saulius Adomaitis** as the new head of its oil and gas business, which will receive a \$500 million boost to expand its focus on the energy transition.

Adomaitis will succeed EY veteran **Andy Brogan** who was promoted to head the company’s global energy and resources strategy division.

Adomaitis, who has 25 years of experience in the sector and was most recently the EY global energy enterprise asset management lead, will lead a team of 10,000 employees in his new role.

Civitas Resources Inc. tapped **Brad Johnson** and **Brian Kuck** to replace senior vice president of operations Dean Tinsley, who will be stepping down.

Johnson joins the Civitas leadership team with over 25 years of industry experience. He most recently served as president and CEO of Ultra Petroleum. Meanwhile, Kuck, who also has about 25 years of industry experience, most recently served as senior vice president of business development and corporate planning at Stephens Natural Resources.

The pair also previously worked for Anadarko Petroleum Corp. earlier in their decades-long careers.

At Civitas, Johnson will serve as senior vice president of asset development, while Kuck will join as senior vice president of corporate planning and business development.

Accelerate Energy Inc. appointed **Deborah Byers** to its board of directors as an independent director and chairperson of the audit committee.

With 36 years of experience in public accounting, Byers recently retired as a partner from EY, bringing to the board experience in multiple leadership roles during her tenure there. She served as the company’s Americas industry leader from 2018 to 2022, where she was responsible for overseeing the growth strategy across primary markets.

Additionally, she served as EY’s Houston office managing partner and U.S. energy leader, as well as managing partner of the company’s Southwest Region strategy and transactions business unit, where she led all phases of energy investment across the industry.



## NEW FINANCINGS

## EQUITY

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Vecino Energy	N/A	San Antonio	\$200	Secured equity commitment from <b>EnCap Flatrock Midstream</b> and management team to acquire and develop infrastructure that will support the domestic oil and gas industry. <b>Kirkland &amp; Ellis LLP</b> served as legal counsel to Vecino, while <b>Winston &amp; Strawn LLP</b> advised EnCap Flatrock. Vecino's management team consists of CEO Wayne Ziegler, president David Ash, COO Jasen Walshak and executive vice president of business development Nelson Ferries.
Electric Hydrogen	N/A	Boston	\$198	Received Series B round financing to develop electrolyzer technologies to create green hydrogen. <b>Fifth Wall Climate Tech</b> led the round with participation from <b>S2G Ventures</b> , <b>Silicon Valley Bank</b> and <b>Trinity Capital</b> . Additional strategic investors included <b>Amazon's</b> Climate Pledge Fund, <b>Cosan</b> , <b>Equinor Ventures</b> , <b>Honeywell Ventures</b> , <b>Mitsubishi Heavy Industries</b> and <b>Rio Tinto</b> .
Nabors Industries Ltd.	NYSE: NBR	Houston	\$7	Invested in <b>Natron Energy Inc.</b> to accelerate the production of sodium-based batteries and introduce the technology to drilling markets as an energy storage solution. Will be able to further expand access to carbon reduction technology in the oil field. The batteries have longer service lives and a higher power density, as well as unique safety features, in comparison to other battery technologies.
Williams Cos. Inc.	NYSE: WMB	Tulsa, Okla.	N/A	Invested in <b>Aurora Hydrogen</b> to aid natural gas to hydrogen technology development. Made the investment through its Corporate Venture Capital program, which supports the commercialization of clean hydrogen, solar, CCUS and natural gas technologies. The investment will support increasing Aurora's production to 200 kg/d and developing a demonstration plant by 2023. <b>Energy Innovation Capital</b> , <b>Chevron Technology Ventures</b> , <b>Shell Ventures</b> and the <b>George Kaiser Family Foundation</b> joined Williams in the investment.
Kinetik Holdings Inc.	NASDAQ: KNTK	Houston and Midland, Texas	N/A	Declared second quarter 2022 cash dividend of \$0.75 per share, \$3 on an annualized basis, to be paid on Aug. 17 to shareholders. Completed accelerated redemption of its Series A Preferred to enhance free cash flow and complete its capital structure simplification. Redemption used cash on hand and drawings under its revolving credit facility. <b>Blackstone</b> , <b>I Squared</b> , <b>Apache</b> and <b>Management</b> will reinvest almost 100% of quarterly dividends under the company's dividend reinvestment plan to provide shareholders the opportunity to have all or a portion of cash dividends declared on their common shares invested automatically into additional Kinetik common shares. Shareholders can terminate plan participation whenever they choose, and participation is optional for public shareholders.
Manchester Energy LLC	NYSE: MANU	Houston	N/A	Will develop a large scale, diversified midstream business through a partnership with <b>EnCap Flatrock Midstream</b> that provides safe and reliable fuels and feedstocks to customers. Platform will also advance energy evolution initiatives to meet its customer base demands. Through the partnership, the company will transform existing businesses given the significant combined experience of its founders in leading and growing both domestic and international business enterprises across the energy value chain.

## DEBT

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Eni SpA	BIT: ENI	Rome	€56,000	Signed five-year sustainability-linked revolving line of credit linked to the achievement of Scope 1 and 2 net carbon footprint upstream sustainability targets and installed capacity for the production of electricity from renewable sources. Twenty three financial institutions granted the line of credit, including: <b>Crédit Agricole CIB</b> , <b>Santander Corporate &amp; Investment Banking</b> , <b>Unicredit</b> , <b>Intesa Sanpaolo</b> , <b>HSBC</b> , <b>BBVA</b> , <b>Banco BPM</b> , <b>Bank of America</b> , <b>Barclays Bank</b> , <b>BayernLB</b> , <b>BPER Banca</b> , <b>Citi</b> , <b>Deutsche Bank</b> , <b>ING Bank</b> , <b>J.P. Morgan</b> , <b>Mizuho Bank</b> , <b>SMBC Bank</b> , <b>Société Générale</b> , <b>Standard Chartered</b> , <b>Bank of China</b> , <b>Bankinter</b> , <b>Mediobanca</b> and <b>Morgan Stanley</b> . A step up/step down mechanism will be used depending on the achievement of the two targets and will affect the margin applicable for following uses of the credit.

Scan to see the New Financings database.



SBM Offshore	Euronext: SBMO	Amsterdam	US\$1,750	Completed project financing for the FPSO ONE GUYANA, secured by a consortium of 15 international banks. Expects to draw the loan in full over the period of construction of the FPSO and will become nonrecourse upon the platform's completion. The platform will be moored in a depth of approximately 1,800 m of water with a storage capacity of about 2 MMbbl of crude oil. Additionally, the FPSO, operated by <b>Exxon Mobil Corp.</b> affiliate <b>Esso Exploration and Production Guyana Exploration Ltd.</b> , will produce approximately 250,000 bbl/d of oil, have an associate gas treatment capacity of 450 MMcf/d and water injection capacity of 300,000 bbl/d.
White Oak Global Advisors LLC	N/A	New York City	\$130	Lead the arrangement for a senior secured term loan to petrochemical manufacturer and provider <b>Trecora Resources</b> . The loan was used to consummate a take private transaction by <b>Balmoral Funds</b> , its second acquisition with White Oak this year.
Blackbuck Resources LLC	N/A	Houston	N/A	Expanded its sustainability-linked term loan with credit investment platform <b>Riverstone Credit Partners</b> to provide the company with additional liquidity to execute on accretive growth from recently signed contracts regarding its Permian Basin platforms. <b>Foley &amp; Lardner LLP</b> served as legal counsel for Blackbuck, while <b>Baker Botts LLP</b> served as legal adviser to Riverstone. Facility pricing will be determined by the company's adherence to its internally created sustainability performance targets, with a second party opinion from consultancy <b>Sustainable Fitch</b> that considered the transaction to be aligned with the five pillars of the LTSA sustainability-linked loan principles.

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# 25 **WOMEN** INFLUENTIAL **IN ENERGY**

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The  
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Oil and Gas  
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# PETROBRAS EYES MORE FPSOs BY 2026

Petrobras looks to dramatically boost production from Brazil's presalt and post-salt offshore formation with the addition of 14 new FPSO units in the next four years.

ARTICLE BY



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**B**razil's state-owned oil and gas producer, Petrobras, expects to bring online 2.25 MMbbl/d of production between 2023 and 2026, with the incorporation of 14 new and already contracted FPSO units offshore Brazil.

The 14 new units will add significant production during the next four years and follow the successful start-up of 12 units between 2017 and 2021 and one unit in 2022, the Guanabara FPSO at the Mero 1 development, Petrobras revealed on its second-quarter earnings webcast. Eleven units are targeting the pre-salt formation, while just three will target the post-salt.

Ongoing FPSO incorporation is part of Petrobras' business strategy, which focuses on growing both reserves and production in the prolific presalt formation while divesting nonstrategic higher lifting cost assets, as well as others related to refining, distribution, energy and natural gas across its portfolio.

The Brazilian presalt was discovered in 2006 and covers an area of 149,000 sq km, according to Rio de Janeiro-based Petrobras. A continued focus on the formation fits with Petrobras' plans to explore new frontiers and discovered areas while focusing on value maximization. Production from the new units will assist to offset production lost from divestments as well natural declines at older and marginal fields.

The presalt offers excellent quality, high commercial value light oil. The offshore formation boasts lifting cost without leasing cost and government

taxes that are below \$4/boe with wells that yield high productivity.

In the second quarter, the pre-salt accounted for 76% of Petrobras' total oil production of 2.11 MMbbl/d and around 73% of combined oil, gas and NGL production of 2.65 MMboe/d. Under Petrobras' 2022 to 2026 business plan, the company aims to boost combined production, post divestments, to around 3.2 MMboe/d in 2026 with the presalt accounting for 79% of the total.

Scan to read the full article.



## FPSO rollout

Petrobras' plan to roll out 14 FPSOs between 2023 and 2026 will consist of five units in 2023 that will add 630,000 bbl/d, three units in 2024 (505,000 bbl/d), three units in 2025 (540,000 bbl/d) and three units in 2026 (570,000 bbl/d). Of the units, Petrobras will charter eight and own six of them.

The new units are expected to be more efficient and provide higher operational safety and reliability as well as emissions reductions, Petrobras' chief production development officer Joao Henrique Rittershausen revealed during the earnings webcast. 

# WORLD ON EDGE OF GLOBAL RECESSION

The International Monetary Fund recommended governments to turn to fossil fuels only as a "stopgap measure" as the world teeters on the edge of a global recession.

ARTICLE BY

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**T**he Washington-based International Monetary Fund (IMF) warned of a more pessimistic economic outlook for the global economy and an increased risk of a global recession as economies from the U.S. to Europe feel the impacts of the pandemic and an ongoing war in Ukraine.

"The global economy, still reeling from the pandemic and Russia's invasion of Ukraine, is facing an increasingly gloomy and uncertain outlook," the IMF wrote July 26 in a new blog, adding that its outlook "has darkened significantly since April."

Russia's invasion of Ukraine has added additional stress on supply chains already stretched by the pandemic, while restrictions on Russian energy exports have spurred food and energy inflation due to higher electricity, gasoline and diesel costs. In response, IMF recommended governments turn to fossil fuels only as a "stopgap measure" in order to mitigate climate change and limit emissions.

The IMF's baseline economic forecast reveals a global slowdown this year and next compared to last year. Gross domestic product is forecast to reach 3.2% in 2022 and 2.9% in 2023, down 0.4% and 0.7%, respectively, from April. This compares to economic growth of 6.1% in 2021.

The lower economic growth prospects are due to slowdowns in the world's three largest economies, including the U.S. which saw reduced household purchasing power and tighter monetary policy, China with further lockdowns and a deepening real estate crisis, and the euro area with continued spillover from the Ukraine war and tighter monetary policy, the international financial institution said.

"Higher-than-expected inflation, especially in the United States and major European economies, is triggering a tightening of global financial conditions," the IMF said. "China's slowdown has been worse than anticipated amid COVID-19 outbreaks and lockdowns, and there have been further negative spillovers from the war in Ukraine. As a result, global output contracted in the second quarter of this year."

## Stopgap energy measures

As global economies continue to boost interest rates to combat inflation and financial conditions continue to tighten, domestic policies "to address the impacts of high energy and food prices should focus on those most affected without distorting prices," the IMF said, highlighting the ongoing energy transition and issues impacting the shift to cleaner energy sources.

"Mitigating climate change continues to require prompt multilateral action to limit emissions and raise investment to hasten the green transition," the blog said, adding that the Ukraine war coupled with rising energy prices has put additional pressure "on governments to turn to fossil fuels such as coal as a stopgap measure."

Europe's energy crisis continues due to reduced energy inflows from Russia. Increased demand in Europe and worldwide for energy other than from Russia has helped the U.S. boost its standing as the world's largest LNG exporter amid robust shale production, according to data revealed in late July by CEDIGAZ, the French gas intelligence entity. Yet, efforts in the U.S. and worldwide still needed to focus on reducing emissions, the IMF said.

"Policymakers and regulators should ensure such [stopgap] measures are temporary and only cover energy shortfalls, not increase emissions overall ... the energy crisis also illustrates how a policy of clean, green energy independence can be compatible with national security objectives," the institution added. 

# DENOVO BOASTS TECH ADVANTAGE TO MONETIZE STRANDED GAS

DeNovo Energy is using technologies from natural user interface to asset integrity management to continuous monitor operations at two platforms offshore Trinidad and Tobago.

ARTICLE BY

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**D**eNovo Energy Ltd. successfully brought online the Iguana and Zandolie natural gas developments offshore Trinidad and Tobago in Block 1A, adding supply through the monetization of stranded gas reserves and use of unmanned platforms that boast unique technological and carbon emission advantages.

Iguana has nameplate delivery capacity of 80 MMcf/d, while Zandolie, tied to Iguana, has a capacity of 40 MMcf/d. Combined, the platforms have the potential to deliver much-needed gas for consumption by petrochemical plants in Point Lisas Industrial Estate located in the central-west region of Trinidad.

“There are many opportunities in the Gulf of Paria that we are exploring and with Zandolie being tied in to Iguana, we have proof of concept that Iguana can become a hub for further development in the Gulf of Paria,” a DeNovo spokesperson told Hart Energy in July.

DeNovo, part of the Proman family of companies, is the operator of Block 1A with an 80% interest while the National Gas Co. of Trinidad and Tobago Ltd. (NGC), through NGC E&P Investments



**“There are many opportunities in the Gulf of Paria that we are exploring, and with Zandolie being tied in to Iguana, we have proof of concept that Iguana can become a hub for further development in the Gulf of Paria.”**

—DeNovo Energy Ltd.

Ltd., has a 20% interest in the block.

The Iguana and Zandolie projects are in line with the strategic priorities of DeNovo and NGC to boost gas production in Trinidad. The developments are governed by separate gas sales agreements between Pt. Lisas-based DeNovo and NGC.

Delivery of initial production from Iguana in November 2018 cemented the project as the first gas development to take place in the Gulf of Paria, off Trinidad's west coast. Zandolie, which delivered first gas in July, was only the second development to be completed in the block, according to DeNovo.

### **Gulf of Paria developments**

Block 1A is located approximately 45 km offshore Trinidad from Pt. Lisas. The block, home to Iguana and Zandolie where water depths range from 80 ft to 90 ft, is limited to the west by the maritime border with Venezuela.

“Monitoring and control for both Zandolie and Iguana assets are all executed from a centralized control room on our onshore gas processing unit, where operators have visibility of the CCTV system, platform control system and safety system,” a DeNovo spokesperson said. “These systems are all functioning as per design and communications have enabled continuous 24/7 monitoring and visibility of NUI [natural user interface] operations.”

### **Iguana Field**

Iguana was first discovered in 1982 but remained undeveloped for over 34 years until DeNovo took over as operator in 2016. Iguana was the first stranded gas field to be developed by DeNovo, which is currently Trinidad's fifth largest gas producer.

DeNovo's fast-track development of Iguana was executed in less than three years and was the first offshore development completed utilizing a local jackup rig, the Well Services Rig 110.

The Sea Swift Platform is used to support three production wells from the field. The platform also includes the installation and operation of a 45 km offshore and onshore 14-inch pipeline that runs to Pt. Lisas where the gas is processed and conditioned and condensates removed.

The Sea Swift is the first such platform to be installed in the region. It uses a low-maintenance, thermo-electric power generation technology using produced gas, designed with up to 30% less steel than off-the-shelf jacketed options, and incurred lower manufacturing and shipping emissions.

### **Zandolie Field**

Zandolie, initially discovered in 1962, is DeNovo's second

field development in Block 1A. Zandolie is a single-well conductor-supported platform and its development builds off the existing Iguana infrastructure, which allows for a more compact topside structure that is lighter and more efficient, according to DeNovo.

The platform for Zandolie is the first design of its kind in Trinidad. It is powered 100% by renewable energy, drawing on an abundance of wind and solar sources.

Additionally, the platform was fully fabricated in Trinidad, “reducing its carbon footprint and maximizing local talent and resources,” the spokesperson said. Zandolie has also been designed to prevent methane slip while shipping the gas during the extraction process and its transport to the onshore gas processing facility in Pt. Lisas.

Oil Plus, a provider of oilfield solutions, is developing a comprehensive maintenance management strategy and program to support ongoing safe operations on Zandolie utilizing its computerized asset integrity management aid, AIM+. The goal is to identify and consolidate data elements to ensure better cost-effective decisions during the entire life cycle of the facility.

“Effective condition monitoring is crucial to ensure production continues at the desired rate, whilst minimizing the risk of downtime and costly repairs,” Oil Plus maintenance engineering team leader Mike Noble told Hart Energy.

Asset integrity management “applies to the entirety of an asset's operation, from its design phase to its decommissioning and replacement. Design, operational and technical integrity must all be managed effectively to control costs,” Oil Plus said.

### **Epic collapse**

Trinidad's gas has experienced an epic collapse in production over the past decade. Production reached 2.55 Bcf/d in May, according to the most recent bulletin posted by the country's Ministry of Energy and Energy Industries. But production is far from the peak of 4.52 Bcf/d seen in February 2010.

An unattractive fiscal regime is partly to blame for the declines as gas producers in the country such as bp Plc, Woodside Energy and Shell Plc, among others, struggle to boost reserves and production to offset natural declines.

The shortage of gas has led to closures of gas-dependent plants across the small twin-island country with the LNG, methanol and ammonia sectors bearing the brunt of the impacts. Higher prices for commodity exports this year, however, have been a blessing for Trinidad's gas-based industries, especially the LNG sector, which accounted for 47% of gas utilizations in May, followed by methanol (20%) and ammonia (17%). 

# Voices

**“The energy crisis in Europe continues to evolve, and it is at the center of a tragic and devastating war. The United States is blessed with an abundance of low-cost natural gas, and I am proud that our collective efforts at Cheniere are having a direct and positive impact on the lives of so many people around the world. We produced, loaded and exported 156 cargoes in the second quarter as our operations benefited from the full quarter of operations of Train 6 at Sabine Pass.”**

**—Jack Fusco, CEO, Cheniere Energy Inc.,** describing the availability of U.S. natural gas to lessen the energy crisis resulting from Russia’s war on Ukraine.

**“We recognize the volatility in the markets. We don’t want to be investing anything that has a cost of supply over \$40. We recognize we need to do that to generate the free cash flow and generate the returns on and of capital.”**

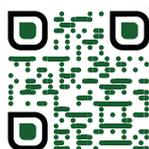
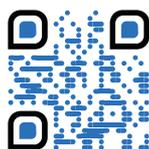
**—Ryan Lance, CEO, ConocoPhillips Co.,** commenting on the potential for investment amid market volatility.

**“Global demand for oil and gas continues to recover from the depths of the pandemic, while supply of oil and gas remains constrained by multiple years of underinvestment, strained supply chain, labor shortages and inconsistent, if not outright hostile regulatory policy on a global scale.”**

**—Lee Tillman, CEO, Marathon Oil Corp.,** discussing the challenges of underlying trends this year.

**“We see a huge opportunity given the anticipated and growing growth in global demand for low carbon hydrogen. Our strategy is to leverage existing demand pools, often our own by the way, and develop advantaged production hubs around that, manufacturing green and blue hydrogen at scale to create competitive supply for global markets. And it is underpinned by our distinctive sources of competitive advantage.”**

**—Bernard Looney, CEO, bp Plc,** describing the increased competitive role of hydrogen in global markets.



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# CHESAPEAKE ROCKS A RETURNS RUNWAY

You can probably call it a comeback—for both natural gas and the company that pioneered the shale drilling of it. The second quarter showed that Chesapeake Energy Corp. is making good on its pledges to return cash to shareholders, green up its production and exit the oil side of the industry. And as Russia's war on Ukraine flips the narrative on energy security and access to natural gas in Europe, Chesapeake's timing is on schedule.





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PHOTOGRAPHY BY  
MARSHALL HAWKINS

**M**ost veterans of the oil and gas industry eventually subscribe to its most common mantra—that its fortunes are cyclical—at least in part because their loyalty requires a sort of zealous optimism that their best days are just ahead.

And if there is a U.S. energy producer that embodies the industry's ability to rebound, it may be Chesapeake Energy Corp.

Founded almost 40 years ago by the late Aubrey McClendon, Chesapeake was an early mover in horizontal drilling. At the top of its game, the company was operating 175 rigs in Texas, Louisiana, Pennsylvania and Ohio basins.

But Chesapeake was just another gas producer burdened by longtime low gas prices during the 2000s. Along with managing in the dismal commodity market, Chesapeake was bucking beneath the weight of \$7 billion in debt in early 2020. And then COVID-19 swept around the world and decimated demand. Finally, Chesapeake capitulated. On June 28, 2020, the company filed for Chapter 11 bankruptcy protection.

That's all ancient history now.

Chesapeake entered and emerged from bankruptcy intending to wipe out its debt, retool its corporate strategy and refocus its operations on natural gas. Less than two years since the firm regained its stock listing, Chesapeake has done all of that and more.

CEO Nick Dell'Osso spoke with Oil and Gas Investor editor-in-chief Deon Daugherty this summer, detailing the firm's new, focused financial strategy and laying out exactly what makes Chesapeake "the most compelling investment opportunity in the energy space today."

**Deon Daugherty:** *Chesapeake has generated more than \$1 billion worth of free cash flow by the midpoint of 2022, less than two years after emerging from bankruptcy. Tell us how you've accomplished this: Is it new assets, new management or new ideas?*

**Nick Dell'Osso:** It's really all of the above. What's great about where we sit today and what is tough about where we sit today is having gone through bankruptcy. We were able to really change the makeup of the company, and we were able to completely remake our cost structure in a way that's been really important to having a sustainable cash flow profile going forward.

Chesapeake had a history of having a number of contracts and legacy issues that were pretty high cost and obviously a lot of debt but also a lot of transportation contracts that were burdensome. We shed all of that in bankruptcy. And so today we have a really tight cost structure and an improved portfolio of assets as well. We've done a lot of work on M&A, as you sort of alluded to in your question, over the last year, and that is yielding some really tremendous benefits as well.

**DD:** *Were you able to renegotiate contracts from the bankruptcy?*

**ND:** During bankruptcy, you can take advantage of the rules that allow you to reject contracts. Basically that opens up a big renegotiation, and so we were able to reduce commitments and renegotiate the commitments that we needed.

**DD:** *That's a benefit of corporate bankruptcy. What were the challenges?*

**ND:** Well, obviously, the biggest challenge is the decision to go into bankruptcy—the decision to tell all of your stakeholders that they are not going to see the benefits of their planned investment in Chesapeake. And that's an incredibly difficult decision to make. A horrible decision to make, frankly, and one that we fought for the better part of 10 years. And we had made tremendous progress in avoiding that eventual outcome. Then, with the market fall of the pandemic, we couldn't escape it.

**DD:** *So all told, it was the pandemic that ushered Chesapeake—and some other E&Ps—into bankruptcy?*

**ND:** The price collapse associated with the pandemic is what got us into bankruptcy.

**DD:** *Since emerging from bankruptcy, Chesapeake has reworked its portfolio significantly. What's next for the footprint, additional corporate deals or just bolt-ons?*

**ND:** We completed a lot during the past year. We purchased a very large asset in the Haynesville [and] a very large asset in the

**“When we think about that magnitude of returns relative to the company we are today, it's incredibly large. We will generate more free cash flow over the next five years than the entirety of our market cap as measured today.”**

Marcellus. We also divested a sizable asset in the Powder River that was less competitive in our portfolio. That's left us now with a portfolio that we're really happy with.

We have a huge inventory—well more than 10 years of inventory in all of our plays—and a really high-quality inventory on top of that. So we think the combination of depth and quality in our inventory is unmatched, particularly in our gas assets. We have the best gas portfolio in the United States, and so we don't need to do anything else. From an M&A perspective, we're pretty content with our portfolio.

That said, we think we've created a lot of value through the consolidation that we've completed. And if similar opportunities were to arise again in the future, we'd be happy to think about them. We just know that in an environment where prices have gone up so far, so fast, that makes deals that look as attractive as what we've completed over the past year much harder.

**DD:** *Given the no-growth demand from shareholders in recent years, how have they responded to the acquisitions?*

**ND:** Really well, and I think it's because we've had a framework that we refer to as our “guidelines” for the way we've thought about acquisitions. We talk about them as non-negotiables and negotiables.

We can't overpay for an asset. It has to be accretive from a cash flow perspective. It can't damage the balance sheet; you have to protect your balance sheet. And it has to have an environmental footprint that you can either be proud of on Day One or improve upon very quickly.

If you bring together all of those things, the upshot of all of that is it has to make you better, not just bigger. Accomplishing all of that, I think investors have reacted very well to the concept of consolidation.

We don't need to go out and have new rank exploration. What we need is efficient development of the resources that have been identified. And when you consolidate assets, you can more efficiently develop those resources, you can rationalize costs and you can improve your capital allocation across a bigger set of assets in a portfolio such that you increase your returns. And that's really how investors want to make sure that you can grow return. They want you to be able to grow cash and returns to shareholders, but you ought to be able to do that without necessarily growing production in the ways that we have over the past 10 to 15 years.

**DD:** *What is that philosophy done for generating shareholder returns?*

**ND:** We think we have the most compelling return profile. While in the industry today we have a base dividend of \$2 a share, we have a variable dividend of 50% of free cash flow beyond that. And then we have a very large buyback program that's currently set to \$2 billion.

When we think about that magnitude of returns relative to the company we are today, it's incredibly large. We will generate more free cash flow over the next five years than the entirety of our market cap as measured today.

**DD:** *That's quite a statement. How will you manage to do that?*

**ND:** Well, our stock price is too low. What that means to us is that the market has not fully adopted or recognized that cash that we will generate over the next five years. That could mean that investors don't believe in the strip, and they don't believe in commodity prices.

But we think it's more to do with us being new out of bankruptcy and needing to prove our track record and showcase to investors that what we're doing is sustainable.

We think that we have a story to tell investors about being, frankly, the most compelling investment opportunity in the energy space right now with the amount of cash that we're generating and ability to return so much of it to shareholders with a balance sheet that can support that for the long term.

One thing you see from a lot of companies right now is a discussion of a lot of cash flow—giant cash flow numbers—but only a much smaller group is actually returning that cash to shareholders in a large magnitude as well.

**DD:** *When you're returning high volume cash back to shareholders, how long do you think it will take for them to realize that Chesapeake is back on track and can support these returns long term?*

**ND:** We'll be impatient about it because we want to provide that uplift in stock price to our investors. And we know that they should be eager to see that as well. But I think it'll take, you know, a couple of quarters. We've done this now for two quarters. We've had a variable dividend in place for two quarters. And we've surprised at the upside with both of those quarters.

**DD:** *Several companies in the space similarly say their stock is undervalued and yet the sector itself spent the first half of the year outperforming the S&P. How does that reconcile?*

**ND:** We've just gotten back to outperforming the S&P really within the last 12 months, but we were such an underperformer in the S&P for so many years.

You can measure the relative valuation in a lot of different ways. One of the easiest ways for our industry, now that we are paying real cash returns to shareholders, is just to look at the yield. And the yield on our stocks is really wide compared to other industries.

You can compare an average oil and gas company yield to other industries and see that it's higher and so therefore relatively undervalued. And then you can compare Chesapeake to oil and gas stocks and see that we are wider than that as well. That's where we come back to saying the most compelling investment opportunity in the energy space today.

## CHESAPEAKE FOCUSES ON RSG CERTIFICATION

All of the natural gas produced by Chesapeake Energy Inc. in the Haynesville and Marcellus shale basins will be certified as responsibly sourced by year-end, CEO Nick Dell'Osso told Hart Energy in an exclusive interview.

Responsibly sourced gas (RSG) is gaining traction among U.S. producers that want to quantify their emissions reduction efforts for shareholders. And a handful of firms have sprouted in recent years to help them.

Chesapeake achieved certification of its legacy Marcellus operations under the MiQ methane standard and the EO100 Standard for Responsible Energy Development, which cover a broad range of ESG criteria. Companies such as Project Canary offer measurement-based emissions profiles using the monitoring technology that has caught up to the need for leak detection. They provide an external validation that a company's emissions and overall carbon footprint are as low as possible, Dell'Osso said.

"Our gas portfolio has a very, very low carbon footprint, a very, very low emissions profile," Dell'Osso said. "But this isn't just for altruism. [Shareholders] recognize that in order to remain competitive in this industry, we all have to be improving our carbon footprint."

Chesapeake has already secured the RSG certification for its entire

Haynesville and legacy Marcellus operations making it the first producer to certify two major natural gas basins. The firm is now working toward completing the same validation process for the Marcellus assets it acquired from Chief E&D Holdings in March.

Altogether, Chesapeake production of 4.5 Bcf/d will have the RSG certification within the next five months, Dell'Osso said.

"We have thousands of active methane monitoring devices that are constantly sampling the air on our production facilities for 365 days a year, 24 hours a day. You also have to have business practices that support a best-in-class environmental footprint," Dell'Osso said. "We've received the grade 'A' MiQ and EO100 certification for responsible energy production from this group for both our Haynesville and the Marcellus assets that we have certified thus far, and we're really proud of that."

Following the initial certification, the assessments will continue annually, validated by a third party, to maintain certification status.

"This is not a certificate that you just put on the wall and feel good about," Dell'Osso said. "You have to be willing to commit to this on an ongoing basis in your operations and have continuous improvement. We're creating sustainable value for our business while positively impacting the communities where we operate."

**DD:** *How has generalist investor sentiment evolved, or are they still in a sort of a wait-and-see pattern?*

**ND:** They're just starting to come back. We are having some good conversations with some journalists, investors, but they're cautious. They're cautious because we live in an environment where as much as prices are very high and seem very sticky and they're having a big role in inflation today, this is a relatively new phenomenon for an industry that has been living with declining prices for the better part of 10 years on the gas side and five years on the oil side.

I think investors want to see a little bit more stability, and they want to understand the regulatory environment they're going to be in. We have so much discussion broadly in the general political and media space about the future of oil and gas and what will the policy decisions be to either support or not support affordable, reliable and lower-carbon energy. I think investors want to see that take hold, and they want to see an industry that is doing the things that we're doing in Chesapeake to be a sustainable part of the energy supply picture.

**DD:** *Energy policy seems pretty tricky. What do you foresee happening in the near term for U.S. energy policy? Is a singular policy possible given the dynamics of the U.S. government, and moreover, is it necessary?*

**ND:** It's totally necessary. And I think the thing that's clear to all of us and clear to the whole world over the past year, but especially the last four or five months, is that the world should look broadly. The world needs more energy. And you can see it in the traditional way that we think about rural communities around the globe being starved of energy or not having had energy supply developed where they live.

But now you're really starting to see it in places where established supply for energy is becoming tight. You see it certainly in Europe as a result of the war and the reduction in Russian supply. But you really also see it in the U.S. at the moment too where we have a robust demand for energy. We have had declining supplies of oil and gas as a result of lack of investment, with low prices then exacerbated by the pandemic. And we have higher prices than we need to have, given the resources that we all know exist.

**DD:** *Regarding ESG matters, particularly the environmental matters, there are different schools of thought as to whether the industry can regulate itself or if it needs the government to step in and set standards. What are your thoughts?*

**ND:** Generally, we think well thought out and established standards are good for the industry. We're proud of our environmental footprint. And we know that we, as an industry, all



need to have a strong environmental footprint in order to be a part of the energy policy.

We have an ability to deliver affordable, reliable and lower-carbon energy domestically and internationally and greatly improve the access to energy around the world again as well as domestically. We have to be really serious about our environmental footprint and our commitment to that environmental footprint and a commitment to improving that environmental footprint. If that's going to continue, if we're going to be successful in improving the world's access to energy and achieving all of those goals of it being affordable, reliable and lower carbon, we have to have a really serious commitment.

So, you probably do need some real regulation around that. We have some and the regulation that we have is good. And I think there are things that can be done around really just following what the industry is doing and putting some sort of rules around it that I think would be helpful.

**DD:** *As a company, what can you do to improve the industry's ESG management?*

**ND:** I'll stay on [environmental] for the moment. There's plenty we can do. It is technology. It is how we invest in our assets. It's going out and making changes in the way our business works. Oftentimes it's very small changes, but you have to make them thousands of times.

I'll give you an example. This year we are retrofitting over 19,000 pneumatic devices across our field. That sounds like a really large undertaking. We will be able to do that in a year, and it will cost us less than \$25 million to complete that project. So, it is a very logical amount of money to spend, and it will have a big impact on our CO<sub>2</sub> and methane emissions.

We will do those things within our business that first and foremost improve upon the emissions profile of our assets. Today, we'll do those on our own.

This is where regulation, though, can be helpful. We are a large company with ample resources and a real commitment to improve [our] environmental footprint. As you get into smaller companies and private organizations, you probably don't have the same capitalization or drive to deliver on that commitment. And so if there is a rule in place that actually steps up the requirements for everyone and puts everyone on a level playing field, then that will flow all the way through the supply demand economics and that will give you a better overall product as an industry. 

# INDUSTRY WELL-POSITIONED IF RECESSION HITS

M&A deals may be smaller and growth constrained, but capital discipline has positioned oil and gas companies on firmer ground to endure a downturn, experts say.

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**W**ary oil and gas executives prepare for a recession as they grapple with inflation and struggle to hire. They hold firm to capital discipline despite the siren call for growth emanating from the triple-digit price of WTI. And they navigate a rocky M&A terrain with more deals of lesser value, steering away from blockbusters.

Welcome to midyear 2022 in the age of contradictions.

There's plenty of data but no certain knowledge about what is to what is to come. High oil prices that bring the industry grief may not be high enough to balance the market, and energy investors are finally getting their pay-days in the midst of an equity market downturn.

Could oil reach \$145/bbl again, as it did in July 2008? Sure, and it could close at -\$37/bbl again as it did in April 2020. The -\$37/bbl close was a one-time affair, but miserable-for-longer is always a possibility.

For example, the \$145.31/bbl close just before the July 4, 2008, holiday morphed into a price of \$30.28/bbl just two days before Christmas 2008. Another example: the tumble from a peak of \$108.23 in September 2013 to \$44.08/bbl in January 2015. And another example ... well, best not to dwell.

But keep this in mind: 2022 is not 2008. A lot has changed.

## Recession forecasts

It's unclear whether the world is headed toward a recession. As defined by the National Bureau of Economic Research, a recession is "a significant decline in economic activity spread across the economy, lasting more than a few months."

The impact is seen in:

- Real GDP;
- Real income;
- Employment;
- Industrial production; and
- Wholesale-retail sales.

David Rodeck, in a piece for Forbes Advisor, lists several catalysts for a recession, including a sudden economic shock, such as the COVID-19 pandemic, and excessive inflation. Another is technological change, such as artificial intelligence and robots eliminating categories of jobs.

The near-term worry is that the economic recovery from the pandemic has sparked excessive inflation. The Consumer Price Index for June showed a 9% annualized

increase in prices during the previous 12 months. To control these hikes and cool the economy, the Federal Reserve has already raised interest rates three times this year for a total of 1.5 percentage points. Depending on economic indicators, the fed has signaled it may raise the cost of borrowing yet again.

But back to our wary oil and gas executives.

"The CEOs, the executives that I talk to within the oil and gas industry are reasonably pessimistic, and they do believe that there will be a recession," Regina Mayor, global head of energy and natural resources at KPMG, told Hart Energy. "I don't know that I necessarily hold that view. I try to be a little more optimistic, but the resounding sentiment across the industry is that a recession is coming."

Mayor is not alone in doubting the inevitability of a recession. The International Monetary Fund (IMF) is not convinced, either.

"Based on the median projection for the policy rate published at the June FOMC [Federal Open Market Committee] meeting, we expect the U.S. economy will slow in 2022 to 2023 but narrowly avoid a recession," the IMF said in a statement in late June.

The organization's forecast is based on the fed continuing to use sound judgement, in its view, and clearly communicating its strategy to the public. Otherwise, things could go sideways.

"The stakes are clearly high," the IMF said. "Misjudging the policy mix—in either direction—will result in sizable economic costs at home and negative outward spillovers to the global economy. An overly forceful policy response runs the risk of triggering an abrupt tightening in financial conditions and a U.S. recession, creating negative spillovers to the global economy. An

insufficient shift in policies, though, would risk creating a prolonged period of high inflation that will necessitate even stronger—and more economically costly—measures in the future.”

“What our clients feel right now is the heightened impact of inflation,” Mayor said. “That’s what’s in their face—the cost of pipe, the cost of field workers, the cost of services, the lack of resources to get things done. So, while the price environment ordinarily would spur a lot more development, the inflationary pressures and the lack of resources are minimizing their ability to ‘drill, baby, drill’ as they might have wanted to in the past.”

Cliff Vrielink, global leader of Sidley Austin’s energy and infrastructure practice, acknowledged that some type of global economic slowdown is likely, but ups and downs are normal. What might set this one apart is that the oil and gas sector is ready for it.

“I think that’s going to be buffered a little bit by somewhat of a return of capital and attention to this sector,” he told Hart Energy. “I think that will make the downturn not as sharp or as dramatic as it otherwise would be. I think people are returning with a bit of a long-term perspective.”

If there is a recession, at least one economic forecasting team predicts it will resemble a pasta bowl—wide, low and shallow.

“We have or will shortly slip gradually into this recession,” wrote authors of the forecast at the Institute for Economic Forecasting at the University of Central Florida. “It will not be a deep recession, but it will likely last four quarters—the wide part of the pasta bowl. When we emerge from this recession, there will not be a rocket-propelled recovery as we experienced in 2020. We will emerge slowly out of the pasta bowl, in the same manner, we went into it.

“This recession will begin and end with a whimper. It may also be just the cure that heals what ails our economy.”

### Price outlook

A global economic downturn will reduce demand for energy, the Energy Information Administration (EIA) predicts, resulting in declines of 18.2% in the price of WTI and 54.2% in the Henry Hub price for natural gas during the next 18 months. That would take WTI down to \$92/bbl from June’s \$112.50/bbl. It would also pull natural gas below \$4/Mcf.

KPMG is more bullish.

“We don’t see the supply/demand fundamentals changing substantially to warrant the decrease in price that we’ve seen,” Mayor said. “I think we stay in the triple-digit territory through the rest of the year at least—high \$90s, low \$100s. Hopefully, not \$120, but I don’t see how what others are saying could



**“The CEOs, the executives that I talk to within the oil and gas industry are reasonably pessimistic and they do believe that there will be a recession.”**

—Regina Mayor,  
KPMG

happen. Our analysts are actually saying it’s going to be higher for longer, not dip, and that this current dip is temporary. I subscribe more to that point of view than some of the other points of view.”

Higher prices also make sense to Goldman Sachs analysts.

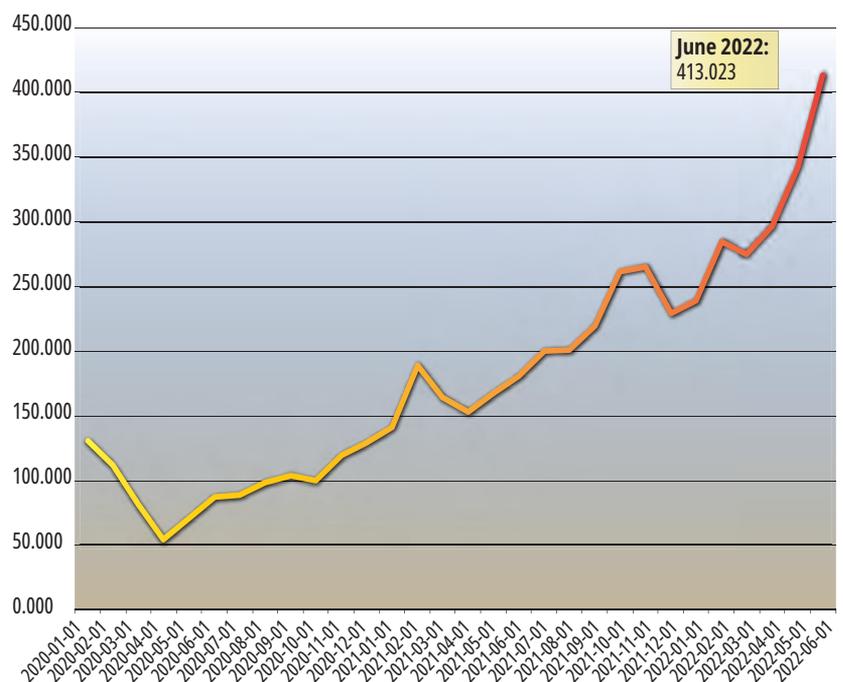
“We continue to see the oil market in a structural deficit that requires still higher prices to rebalance,” they wrote in a July 7 research note. Much higher, in fact. For supply and demand to balance by late 2023, Goldman Sachs said, Brent needs to average about \$135/bbl in second-half 2022 and first-half 2023.

In natural gas, Goldman Sachs projections match up with EIA’s. Limited growth in LNG exports will not keep up with supply increases, pulling the price down to about \$3.80.

But even if oil prices do fall, that’s not necessarily a bad thing, Vrielink said.

“The reality is, I’ve heard a number of people say, ‘for the health of the oil and gas industry, we’d rather have \$60 to \$70 oil than \$100 to \$110 oil,’” he said. “It’s efficient for people to run their businesses and plan for the future and earn a decent return. And it doesn’t provide the same kind of shock and pain across the economy that these higher prices do.”

### Producer Price Index for Oil and Gas Extraction (January 2020-June 2022, 1985=100)



Source: Federal Reserve Bank of St. Louis

**“The reality is, I’ve heard a number of people say, ‘For the health of the oil and gas industry, we’d rather have \$60 to \$70 oil than \$100 to \$110 oil.’ It’s efficient for people to run their businesses and plan for the future and earn a decent return.”**



—Cliff Vrielink, *Sidley Austin*

**M&A**

Even in the best of times, big mergers are hard to put together, Vrielink said. It’s not just whether the deal makes economic sense, but a number of complex elements, including the different financial perspectives of the stakeholders, can be difficult to align. But not all deals need to be blockbusters.

“We’re actually seeing quite a bit of M&A activity,” he said, “more in bite-size chunks, where they really make a lot of strategic sense. You’re still seeing consolidation plays. I think those will continue to occur from time to time when the various complex elements of any kind of a merger come together.”

Mayor sees plenty of potential for an increase in M&A.

“I have a lot of clients that are sitting on a lot of cash, and they are actively looking for opportunities,” she said. “They are hoping that the price environment shifts downward a little bit more to close the bid/ask price gap, which makes the multiples not tenable. So, in this current

price environment, even though there’s cash available and consolidation probably would be a good thing, I’m not bullish that we’ll see a lot of M&A in the near term.”

**Growth**

There’s no lack of public pressure, including pressure from the White House, for the industry to quickly ramp up production. It’s not going to happen, though, not like it has in the past.

“I don’t think you’re going to see many people pursuing a strategy of going out there and finding prospects, drilling them up and trying to flip them,” Vrielink said. “I think that strategy is just not the main strategy anymore. There was a time period when that was what people really did. It really was all about growth.”

In recent years, though, it’s all been about capital discipline and about returning cash to investors, he said. Not that many aren’t tempted, given the persistently lofty levels of oil prices.

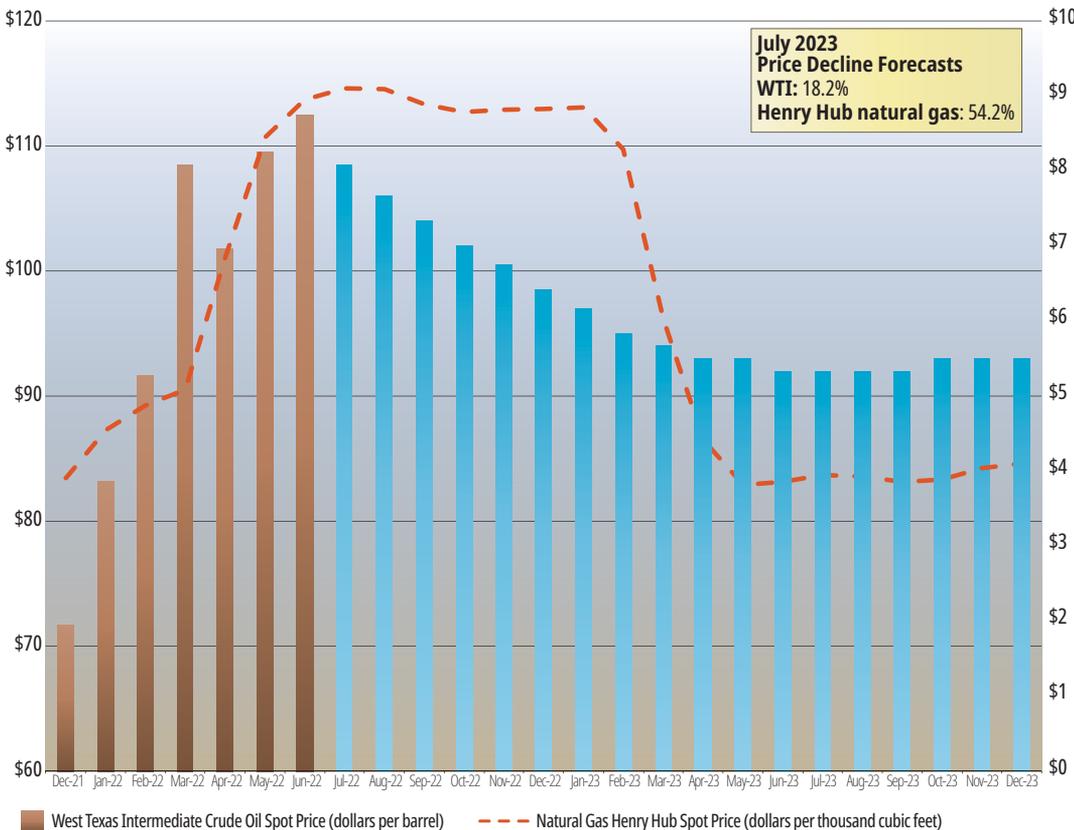
“I think you will continue to see people ease away from that some,” he said. “And

some people will be more aggressive than others. But the pendulum swings and I think it will return more to the middle than it has.”

The transition from a negative price for a barrel of oil to a news event when the price slips below \$100/bbl has put executives in a tricky situation, Mayor said. How long will these high prices last? And how long will inflation remain high? And what is the best way to add production in this regulatory environment?

“With that inflationary pressure that’s right in their face, they also—because they have a natural pessimism about what’s going to happen to the economy in the future—they’re not that bullish about unleashing a lot of capital spend, too,” Mayor said. “It’s really a lose-lose mindset that they’re grappling with and struggling with.” **OCI**

**WTI And Henry Hub Price Projections Through 2023**



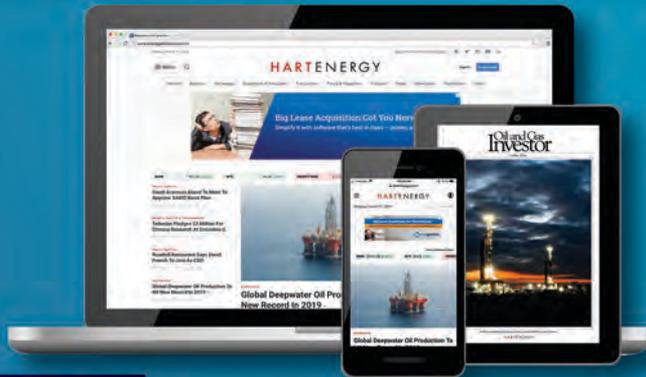
Source: Hart Energy chart; U.S. Energy Information Administration data

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# TIDE TURNS TOWARD US GULF OF MEXICO WIND

Expanding the budding U.S. offshore wind sector has been a key cog in the Biden administration's clean energy ambitions, which includes deploying 30 gigawatts of offshore wind by 2030.

ARTICLE BY



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**A**n abundance of shallow-water resources with depths below 60 meters (m), warmer climates and access to offshore supply chains with skilled workers bodes well for the U.S. Gulf of Mexico's (GoM) future in offshore wind, experts say.

Add to this positive momentum being built by policymakers eager to diversify energy supplies, and the GoM—home to oil rigs, marine life, shrimp boats, ships passing through and military activity—may be on its way to becoming the world's next wind energy powerhouse.

That is if offshore wind players see beyond risks and pursue leases when the Bureau of Ocean Energy Management (BOEM) offers acreage for development, a move that could come in early 2023.

Between now and then, there is plenty for stakeholders to think about besides the weather, specifically whether offshore wind turbines can withstand a Category 5 hurricane that packs a wind speed of at least 157 mph and a potential storm surge greater than 20 ft.

"I know that many companies are looking at it [GoM wind area leasing] right now. It doesn't mean that they're going to participate, but I know everybody's

paying attention," said Ella Foley Gannon, a partner and permitting lawyer with the Morgan Lewis law firm. "There's an interesting blend of consortiums of different developers who are getting joint ventures together for these sorts of efforts. Do I think that we're going to see the same sort of interest that we saw in the Bight? I don't think so. But do I think we'll see significant interest? Yes."

Expanding the budding U.S. offshore wind sector has been a key cog in the Biden administration's clean energy ambitions, which include deploying 30 GW of offshore wind by 2030. So far, only two wind farms are operating in federal waters off the East Coast—Block Island off Rhode Island and the Coastal Virginia Offshore Wind project. However, several more are in the works, mostly off the East Coast, and more could be on the horizon.

Which GoM areas go on the auction block, should the BOEM call a lease

**Only two wind farms are operating in U.S. federal waters off the East Coast—Block Island off Rhode Island and the Coastal Virginia Offshore Wind project.**



MASHA BASOVA/SHUTTERSTOCK

sale, and whether offshore wind players dive into GoM action remains to be seen. Some say state incentives, contracts and financing are among the factors that will determine success.

**The next wave**

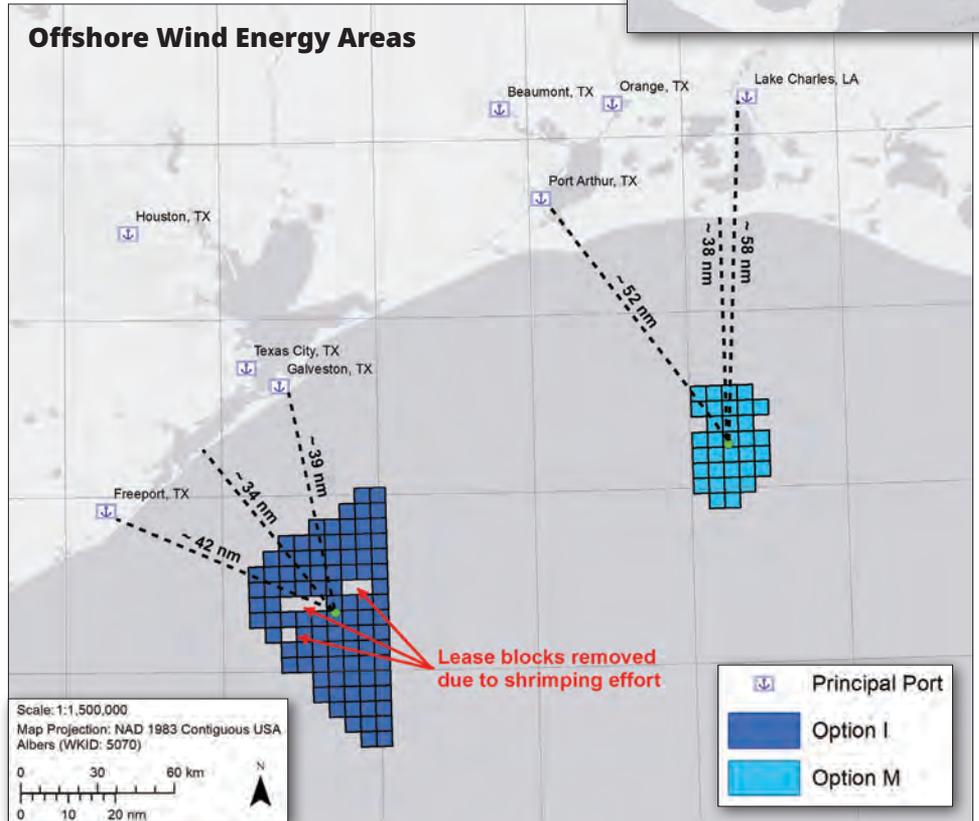
The U.S. is seeking public comment on nearly 735,000 acres identified offshore Texas and Louisiana for potential wind energy development in the GoM with a potential to power more than 3 million homes. The areas—one about 24 nautical miles off the coast of Galveston, Texas, and the other about 56 nautical miles off the coast of Lake Charles, La.—were unveiled July 20 by the BOEM.

The acreage is a sliver of the initial 30-million-acre area in the GoM the Department of Interior opened for public comment in October 2021. Decisions have not been made yet on which parts of the identified acreage would ultimately become part of future leases.

A two-part 2020 study, prepared by the National Renewable Energy Laboratory (NREL) for the BOEM, shed light on the region's high potential to deliver utility scale electricity based on resource adequacy, technology readiness and cost competitiveness. Though the GoM's wind resources are lower than northern Atlantic and Pacific coastal states, the study stated, resource capacity is large in GoM shallow water less than 60 m deep. Under certain conditions, it ranked offshore wind resource capacity offshore Louisiana, Texas and Florida among the highest in the U.S.

“The primary technical challenges for offshore wind turbines in the GoM are gaps around hurricane design, lower wind speeds and lower soil strength,” the NREL said. “None of these challenges are insurmountable, but all will require some additional investment in research, development and deployment to adapt the technology and gain the experience needed for commercial acceptance. Each challenge could result in incremental capital cost increases.”

Better turbine access, shallow-water siting, lower labor cost and direct access to the oil and gas industry's supply chain, however, could help offset higher costs.



Source: BOEM



State and federal policies to incentivize development and procurement of offshore wind is a key component, Gannon said.

"That will define where we're going to have at least the initial success of offshore wind," she said.

### Policy push

State programs and momentum behind such efforts should be top of mind for companies interested in developing GoM wind energy projects, experts say.

"I think [they] made the difference in the prices we saw in the New York Bight versus what we saw in Carolina," she said. "Without having any contracts in place or any definitive signs that you're going to get contracts in place, you can't put as much capital at risk."

In New York, policymakers are aggressively pursuing clean energy. Here, law mandates 9,000 MW of offshore wind energy must be developed by 2035 and at least 70% of the state's electricity must come from renewable energy sources by 2030.

North Carolina Gov. Roy Cooper called for 2.8 GW of offshore wind capacity by 2030 and 8 GW by 2040, but state law doesn't mandate the goals.

The February 2022 New York Bight offshore wind auction for six leases drew competitive winning bids from six companies totaling nearly \$4.4 billion with bids ranging from \$285 million to \$1.1 billion.

The May 2022 Carolina Long Bay Offshore Wind lease sale for two leases brought in \$315 million in total winning bids—one for \$155 million, the other for \$160 million.

Looking at the GoM, Gannon said there is no government focus on contracting wind, and price challenges are expected for the foreseeable future.

"Without having any sort of firm commitment from the purchasers of the energy and from the state to purchase that energy, that's obviously a huge challenge."

Ben Koenigsberg, co-head of projects for Norton Rose Fulbright US, agreed that public policy, including commitments by states on renewable energy goals over the next 20 years, are important to accelerating GoM wind development.

"A lot of states on the East Coast have already done that and that inspires confidence in the market and inspires confidence in developers knowing that once I win a lease, I'm going to have somewhere to sell the power," Koenigsberg said. "One of the risks here is you win a really large lease and then you have to pretty much pay upfront the price that you won. That's a big risk to developers if they don't know that there's a commitment" from states to issue solicitations to support those large leases.

Louisiana has established a climate initiatives task force and climate action plan that aims for net-zero emissions by 2050 and development of an offshore wind plan targeting 5 GW by 2035.

Texas has not set any offshore renewable energy goals, according to a BOEM Draft Area ID Memo. The state is a leader in both fossil fuel and renewable energy production, including onshore wind and solar.

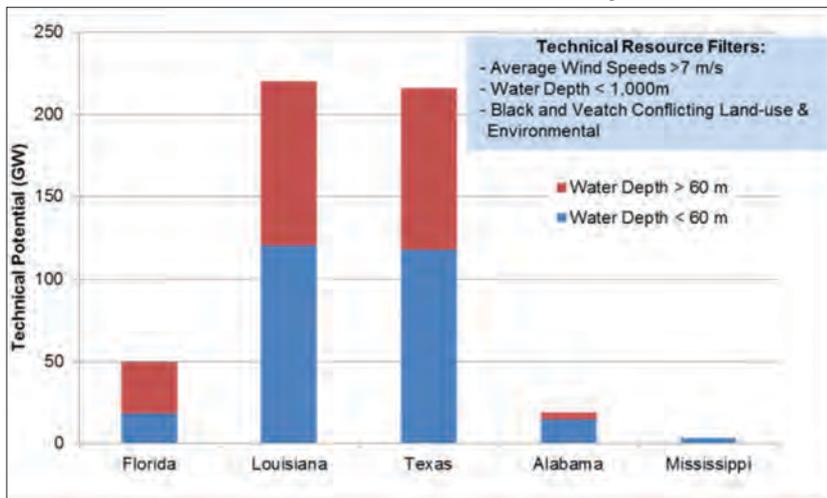
"On the federal side, there's already been a fair amount that's been done extending the qualification for tax credits to the 30%. That's really helpful to help spur development," Koenigsberg said.

### Eyeing liquidity

Should companies pursue GoM wind, will they have access to capital?

"In the current market, there is a wall of liquidity and a fair amount of capital available to build these projects," Koenigsberg said, speaking to the commercial bank market component. "It will remain to be seen where things

### Technical Offshore Wind Resource Potential By State In GoM



Source: BOEM



go with the economy. ... But if the last five years is an indication of what's available in the future, there's definitely enough capacity to get these deals done. A number of the really large projects that have been financed recently have been oversubscribed."

Banks understand risks associated with such projects, and getting financing wouldn't be difficult—in his opinion—if the project is structured properly from the contract development and permitting perspectives.

However, tax equity—the other essential component—"is not in as great supply as the debt markets," he added. Many renewable energy projects both onshore and offshore are competing for limited tax equity dollars.

Direct pay to bypass the tax equity market "would help inspire more confidence in the offshore wind market and spur development," Koenigsberg said. "If you don't have that, you're relying on the tax equity investors being there."

If the Inflation Reduction Act (IRA) becomes law, significant benefits, including funds to staff agencies charged with permitting like BOEM, would be in store, possibly speeding up processes, Gannon added. "I think these are all the right incentives. ... It's what we need to be able to get this done."

The Senate's recent passage of the IRA is boosting confidence.

"That should free up a lot of capital if it ends up passing," she said.

### Looking forward

Another area for potential GoM wind developers to think about alongside local, state and federal agencies is the power grid, they say, particularly in Texas where demand is great. That could be a blessing or a curse for developers, if infrastructure is insufficient or planned poorly.

"The infrastructure is not in place, and while we've been hearing some support from Texas and Louisiana to support this, it doesn't exist today," Gannon said. "But this is the same problem we have almost all over the country: how are we going to get this into our grid effectively and efficiently? I don't think those answers are developed yet."

The GoM, however, has some advantages that are already helping move offshore wind ahead.

"The oil and gas experience that exists in this part of the country is directly applicable to the type of work that needs to be done to create offshore wind," Gannon said. "This is where we're seeing some of the real manufacturing to support the Jones Act compliant shipbuilding and turbine building. That type of manufacturing is likely to continue to grow in Texas, Louisiana, Florida, etc."

The offshore GoM community is also accustomed to working together, making for fewer conflicts between different industries such as energy and commercial fisheries. "It's a very different footprint for offshore wind, but it's a community that is more used to dealing with problems than most places looking at developing [wind] in the Northeast and even in California," Gannon said.

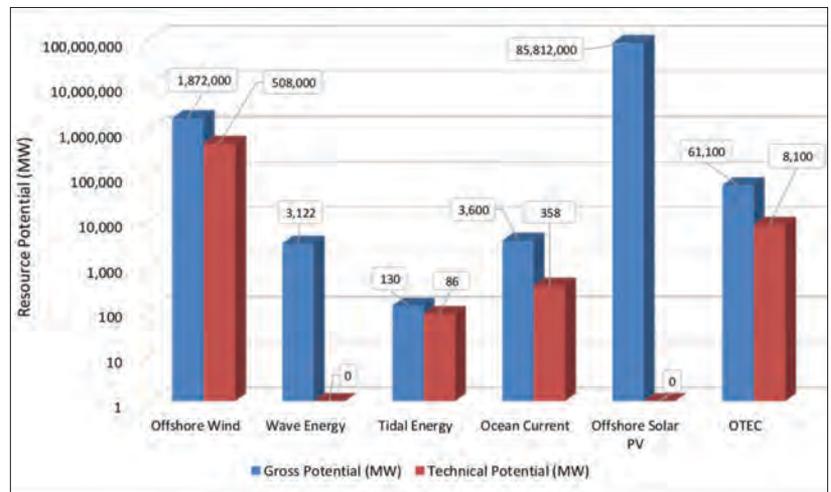
Economies of scale could also factor into companies' decisions to enter GoM wind. That could bring some of the same players from the East Coast to the GoM. With coordination, economies of scale will carry over, including on the supply chain side, according to Koenigsberg.

What should companies considering going for GoM wind leases be doing now?

Koenigsberg suggested putting thought around where the lease auctions could land, understanding the wind resource and assessing the power market.

"What you think you're going to be able to sell the power for are obviously important factors in trying to determine whether it makes sense to bid on the next auction," he said. 

### Gross And Technical Offshore Renewable Energy Potential In GoM



Source: BOEM



**Offshore wind energy turbine supply vessel anchored and loading rotor in port harbor.**

# WHY PUTIN BROUGHT A PIPELINE TO A KNIFE FIGHT

Squeezing the European natural gas supply with winter approaching is a tactic in Russia's war with Ukraine, but the global consequences could mean a resurgence of coal.

GIOVANNI CANCEMI/SHUTTERSTOCK.COM

ARTICLE BY



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**Above, Kyiv is rocked by explosions on Feb. 24 as the Russians began their invasion of Ukraine.**

A recent panel of three natural gas experts discussing the Russian invasion of Ukraine and the subsequent global energy crisis made two major points:

- The situation didn't have to be this bad; and
- Without taking significant actions, it could get a lot worse.

The U.S. and allies responded to the Feb. 24 invasion with sanctions meant to exact a high price from Russia. But high prices go both ways.

"Western sanctions have a goal of degrading Russia as an energy supplier," said Kevin Book, managing director of ClearView Energy Partners LLC, during an Energy Dialogues webinar hosted by Baker Botts. "That's an interesting proposition because, if it succeeds, we're looking at a potentially sustained shortage of energy."

Tensions between energy haves and energy have-nots could strain alliances, he said, noting that some friendships between countries could be tested now that energy supply is no longer secure. To be blunt, Book said, when energy stops, the bets are off.

"The U.S. already has some sanctions fatigue from high prices," he said. "Other countries in the world are getting there too. High prices constrain opportunity. But empty tanks, empty pipes constrain reality."

Part of that reality of European vulnerability relates specifically to the pipes. Russia provided about 40%

**"I think we will continue to see many countries return to coal, and we're already seeing that happening in Europe."**

—Renee Pirrong,  
Tellurian Inc.

of the EU's natural gas supply prior to the war, most of it by pipelines. The volumes of LNG only constituted about 5% of European demand.

"Let's say that the world had not had any pipelines and all gas was traded by LNG," said Gabe Collins, Baker Botts fellow in energy and environmental regulatory affairs at Rice University's Baker Institute for Public Policy. "Gazprom would not have been able to withhold

the equivalent of 5% of annual European gas demand in 2021. Those tankers would have just gone to China or South Korea or Japan, and whatever would have gone there would have been rediverted to Europe. Fungibility would have filled the gaps. Pipes break the fungibility."

In effect, the infrastructure has allowed Russian President Vladimir Putin to weaponize natural gas.

"A pipeline is by far and away the best way to coerce," Collins said. "It's a bit like a knife fight where you're tied to each other but, I think in this case, the Russians have a longer, sharper knife than the Europeans do, and we're seeing that play out in real time."

If Russia wants to win on the ground in Ukraine, Book said, it may need to win on the grid in western Europe first. The EU's target of reducing natural gas usage by 15% confronts that strategy.

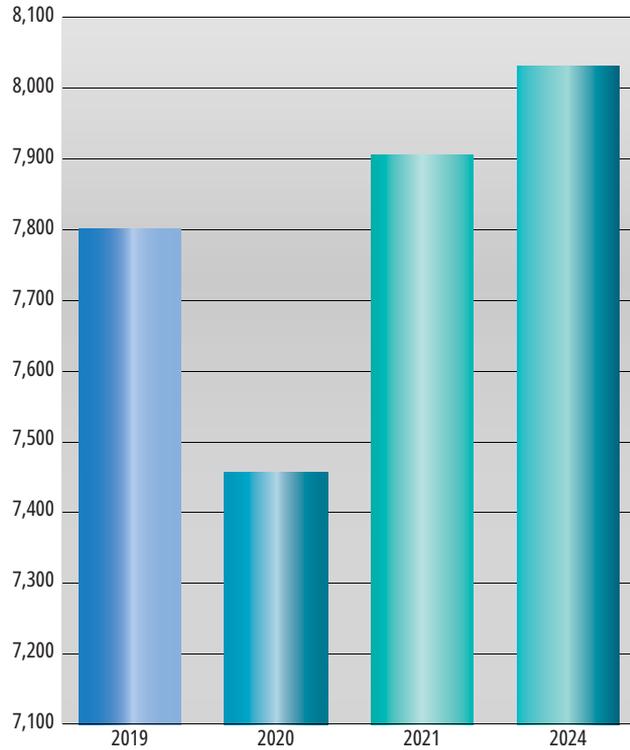
**Setting the stage**

How could a global energy system suddenly shift from abundance and affordability to shortage and crisis? It wasn't sudden. It took time and money—or, a lack of money.

"Under the surface, this crisis is underpinned by years of underinvestment, not only in gas and LNG, but also in traditional fuels, as we've diverted billions of dollars away from dispatchable fuels to intermittent greener sources," said Renee Pirrong, director of research and analytics at Tellurian Inc. "And all the while, we've been ignoring energy security realities that have never really gone away."

What we are experiencing in the wake of the war in Ukraine is a paradigm shift in the global price environment, she said. And get used to it. Structural changes to both supply and demand across all LNG markets—but

**World Coal Consumption**  
(metric tonnes, projection for 2024)



Source: Hart Energy charts; International Energy Agency data

*The economics of tighter natural gas supplies have increased demand for cheaper coal.*

more broadly, energy markets—will make this era of scarcity far more durable than the bull markets enjoyed in the past.

The structural changes begin with a demand shock. Asia has historically consumed about 75% of global LNG, Pirrong said, but by 2035, Europe could command a 40% share of the market. That couples with a supply shock, as sanctions remove not just LNG that Russia produces today, but huge volumes that would have come from Russian projects that cannot move forward without partnerships with western companies.

Near-term result: demand destruction.

## Nord Stream 2

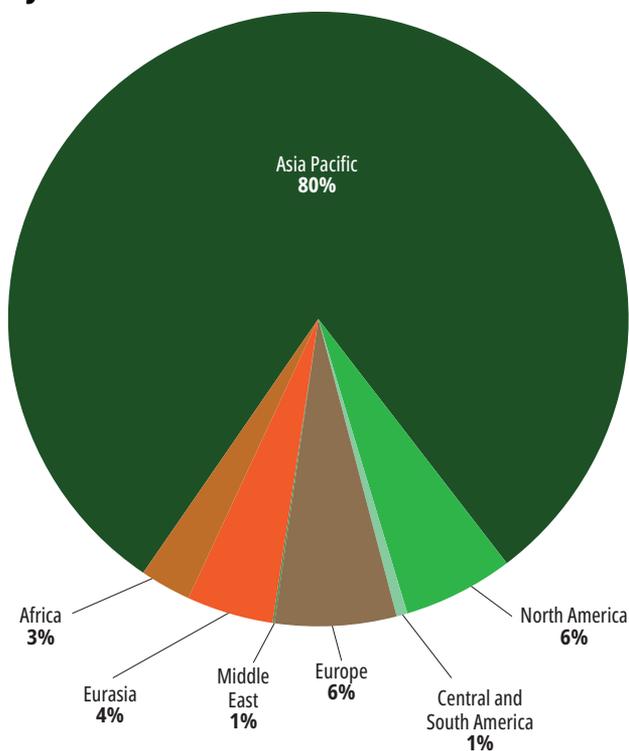
**Length:** 759 miles of two parallel lines, from Slavyanskaya compressor station near Ust-Luga, Russia, to Greifswald, Germany. With the exception of onshore Russia, it basically follows the route of Nord Stream.

**Crossings:** Russia, Finland, Sweden, Denmark, Germany.

**Capacity:** 27.5 Bcf/year for each line.

**Cost:** \$16.4 billion.

## Projected Coal Consumption By Market Share In 2024



Source: Hart Energy charts; International Energy Agency data

"I think it's ironic and a little bit sad that Europe, which has been, to some degree, lecturing the rest of the world against investing in gas, is now diverting LNG away from the markets that need it the most in the midst of this crisis to shore up its own supply," Pirrong said.

Long-term result: more consumption of coal.

"I think we will continue to see many countries return to coal, and we're already seeing that happening in Europe," she said. "European coal consumption has reversed its declines and they are now prolonging the life of those existing coal-fired power plants."

From 2020 to 2021, the EU's coal consumption rose 11.5%, according to the International Energy Agency (IEA).

### Day of infamy

Collins cited three pivotal events that brought matters to a head in the European natural gas market.

**March 2014:** Russia annexes Crimea, igniting a separatist war in eastern Ukraine. "These events should have accelerated Europe's efforts to diversify away from Russian gas, but the largest consumers in western Europe, instead, actually sought to deepen their reliance on Russian gas by continuing to pursue the Nord Stream 2 project," Collins said.

**Mid-2021:** Gazprom begins systematically withholding gas flows to western Europe. "This now appears, I think, with the benefit of a bit of hindsight, to be an intentional preparatory step aimed at destabilizing European economies and political systems in advance of the invasion that the Kremlin, by that point, likely knew that it was going to launch."

**Feb. 24, 2022:** Russia invades Ukraine. "I think it's not overstating to view this as 21st century Europe's day of infamy," Collins said. "I think it's very reasonable, as well, to think that, as a byproduct to this violent revisionism, it's probably reshaped European and, arguably, global gas markets for years, if not decades to come."

Over the short term, Collins said, Europe will experience the roughest winter among industrialized countries in terms of tightness in the gas market and high prices. This will be the case, though to a lesser extent, in northeast Asia and the U.S.

However, the outlook for developing countries is dire.

"It's not simply having to pay more but still being able to have your heat and have your lights on and so forth," he said. "It is much more likely to be a situation for hundreds of millions around the world to actually be priced out of these markets, with the attendant consequences that come with that."

### Crossroads

If Collins sees the European gas struggle as a knife fight with Putin, Pirrong has a different take.

"This is a romantic comedy," she said. "You know, Europe realizes it always needed gas, and it should have never said goodbye in the first place."

In Book's mind, Europe was of two minds even before the war.

"The issue we were looking at before the Russian invasion was Nord Stream 2, which looked to be a long-lived investment with significant endurance, never mind the transition discussion in the foreground," he said. "I think there was always going to be fairly strong gas commitment in Europe, but it's one of the things that, in particular, the national security case for transition has grown stronger."

The question is whether Western countries will commit to drilling. Book wasn't sure, noting that Europeans tend to be squeamish about environmental concerns.

But what is ultimately at stake transcends the war in Ukraine or the natural gas market within the confines of the EU. It is all about decisions that will be made in world capitals during the next six to 24 months.

"To really put things in blunt terms, if there's not an expectation of affordable and secure gas supplies, at some point, reasonably here in the future, we're likely to see additional coal lock-in," Collins said. As far as Europe is concerned, that means extending the life of a coal-fired power generation plant that was scheduled to be shut down.

In China, India and Southeast Asia, however, it means that if a decision is made to build a coal plant, then that facility is likely to operate for 40 or 50 years with the emissions consequences that go with it.

That is not an inevitability. If the political will can be mustered, Collins said, there is an opportunity to signal natural gas producers that gas is a high-value energy transition fuel that will be needed for a long time. Such a signal could be what is needed to support capital investments and bring additional supplies to market.

Or things could get a lot worse. 

# AS ENERGY TRANSITION UNFOLDS, OFS SECTOR ADAPTS

Renewable energy companies have developed novel solutions that require oilfield services expertise.

ARTICLE BY



**MATTHEW KEILLOR**  
ENVERUS

@MatthewKeillor

The world appears to be set firmly on the path of the energy transition away from oil and gas over the coming decades. Following Russia's invasion of Ukraine, the timeline for peak oil demand is less clear than it was, but Enverus Intelligence™ | Research still believes it is likely to occur before 2030. Although there will continue to be significant work for oilfield service (OFS) companies during the coming decades, as the global energy mix moves further into cleaner alternatives, there will ultimately be less work to go around in the legacy oil and gas industry.

However, there are already some opportunities for OFS firms to adapt and apply their skills in the changing environment, such as drilling wells for carbon capture storage projects. Companies are also developing novel renewable energy technologies that require OFS expertise and skill sets. Three such companies are Quidnet Energy, Eavor and Proton Technologies, whose technologies require either drilling new wells or repurposing existing oil fields and infrastructure. More innovators are likely just over the horizon.

## Pumped storage solutions

Houston-based Quidnet is an energy storage firm that has a novel approach to pumped storage. Traditional pumped water storage typically utilizes two reservoirs at different elevations to store energy. Surplus electricity is used to pump water from the lower reservoir into the upper reservoir, and when electricity is needed, water from the higher reservoir is allowed to flow over hydroelectric turbines to generate power. However, it is difficult to find suitable

locations, and projects are capital and time intensive.

Quidnet's geomechanical solution instead uses subsurface rock layers as energy storage reservoirs. When surplus electricity is available, water from a pond is pumped down a well and stored under pressure between layers of shale. When electricity is needed, the well is opened to let the pressurized water pass upward through a turbine and generate power before returning to the pond for the next cycle. Business development vice president Richard Brody previously told Enverus the technology is projected to have a total roundtrip efficiency of 65% to 70%.

Quidnet COO Jason Craig told Enverus the company's geomechanical pumped storage technology typically uses shallow vertical wells that are 1,500 ft deep or less. Besides drilling itself, which can be handled by the vast majority of the active rig fleet, the wells are logged, cased and cemented. Construction of the underground "storage lens," where water is kept under pressure, is accomplished using the same pressure pumping spreads as unconventional oil and gas wells.

The company announced in 2021 that it was building a pilot project in

Alberta, Canada, and in March, it signed a 15-year commercial agreement with San Antonio utility CPS Energy for a two-phase project that could ultimately have 15 MW of storage capacity. The company has previously built test sites in Medina and San Saba counties, Texas, and is currently working on pilot projects in Ohio, New York and Alberta.

In the next 10 to 20 years, Craig said Quidnet expects to commence operation of multiple grid-scale projects of 100 MW or more each year. Each project would consist of dozens of electrically connected 2-MW to 8-MW wells, similar to wind farm architecture. Craig added that annual well counts are expected to be in the hundreds. Existing excess drilling and completion capacity will be able to deliver billion-dollar-scale storage projects over the coming years, he said.

Besides drilling services, Quidnet's technology requires professionals with many skill sets common to the oil and gas sector, including geology and geophysics, design and engineering, project development, origination and finance, construction management and asset operations and maintenance, according to the company's website. Craig said Quidnet's technology repurposes the existing OFS infrastructure and workforce, and the company's current and future field and office staff are predominately sourced from legacy oil and gas roles.

### Drilling advances

Eavor, a Canadian geothermal company, proved its technology in 2019 at its Rocky Mountain House, Alberta, demonstration project and is set to move forward on its first commercial project in Germany. The Eavor-Lite demonstration project consisted of two wellbores drilled several kilometers apart with multilateral sections connected toe-to-toe underground and by pipeline at surface. The conduction-based system circulates a benign working fluid to pick up subsurface heat, which is discharged in the surface facility to generate electricity.

The company's commercial Eavor-Loop 1.0 configuration drills both vertical well sections from the same location to reduce the surface footprint, according to an Eavor video. Once at depth, the wellbores turn 90 degrees and branch into multilaterals to create more surface area where the working fluid will be in contact with the rock. An updated Eavor-Loop configuration is being developed to angle the laterals deeper into the rock, increasing overall heat extraction and stackability. An Eavor spokesperson told Enverus the company uses a proprietary technology called Rock-Pipe that allows it to drill and case wells simultaneously, increasing efficiency.

Eavor's chief business development officer and co-founder, Paul Cairns, told Enverus the company used two roughly 1,000-hp double rigs, owned by Precision Drilling, to drill the Rocky Mountain House wells. He added that future commercial projects will utilize larger triple rigs.

The company's goal is to provide power or heat to 10 million homes globally in the next 10 years, which in the mid-case could require around 1,000 Eavor-Loops. Cairns said the capacity of each Eavor-Loop depends on the geology of the area and the application. Loops used for heating applications might cover 10,000 to 15,000 homes, while loops used for electricity generation would cover fewer homes. The first commercial power project in Germany, which Cairns said has a lower heat gradient, is expected to be able to provide power for 4,900 homes per Eavor-Loop, according to the

company's July 5 statement. Eavor's power projects can provide either baseload or dispatchable power as needed.

Besides drilling, the Eavor spokesperson said most technical OFS disciplines also apply to the company's projects. In Alberta, where the company is based, its job listings can get as many as 800 applications, mostly from oil and gas industry professionals. Eavor, which received backing from bp Plc and Chevron Corp. in 2021, currently has a development pipeline of about 200 projects across the globe, including in Asia, Europe and North America.

Eavor is also working on new drilling technology that the spokesperson said will allow onshore commercial wells to reach depths never seen before, with more information from an ongoing project expected to be released in the fall. The world's current deepest onshore oil well, Z-44 Chayvo, was drilled by Exxon Mobil Corp. to more than 40,000 ft in Russia.

### Hydrogen production

Proton Technologies, another Canadian company, aims to produce hydrogen in situ from existing oil fields and infrastructure where hydrocarbon production is no longer commercially viable. Proton's system produces hydrogen, heat and other products by heating an oil reservoir with steam to around 250 C before injecting oxygen-enhanced air to begin in situ combustion, which further heats the reservoir and begins breaking down hydrocarbon chains. Once temperatures reach 500 C and above, injected steam or water vapor reacts with the hydrocarbons, producing a temporary source of free hydrogen gas and CO<sub>2</sub>.

A demonstration project in Saskatchewan that began operations in early 2021 could ultimately produce 1,000 tonnes per day of hydrogen while leaving CO<sub>2</sub> in place as solid carbonate. UPC Hydrogen signed a deal in September 2021 to license and use Proton's technology in select Asia-Pacific countries. Proton also signed a letter of intent in early April to supply flare gas from the Saskatchewan project to a 15-MW power plant. At the time, CEO Grant Strem said hundreds or thousands of projects over the coming years could repurpose late-life assets using Proton's technology. Clear Hydrogen UK Ltd. expanded an existing agreement with Proton in April that could allow it to produce up to 5,000 tonnes a day of hydrogen from aging oil fields in U.K. waters. 

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*Matthew Keillor is the primary writer for Enverus' International Pulse and Quick Price reports, focused on the operations of international upstream oil and gas companies, international M&A and renewable energy/ESG in the U.S. and abroad.*

# AMERICA'S NATURAL GAS

*SPECIAL REPORT*

2022



U.S. natural gas gains momentum.

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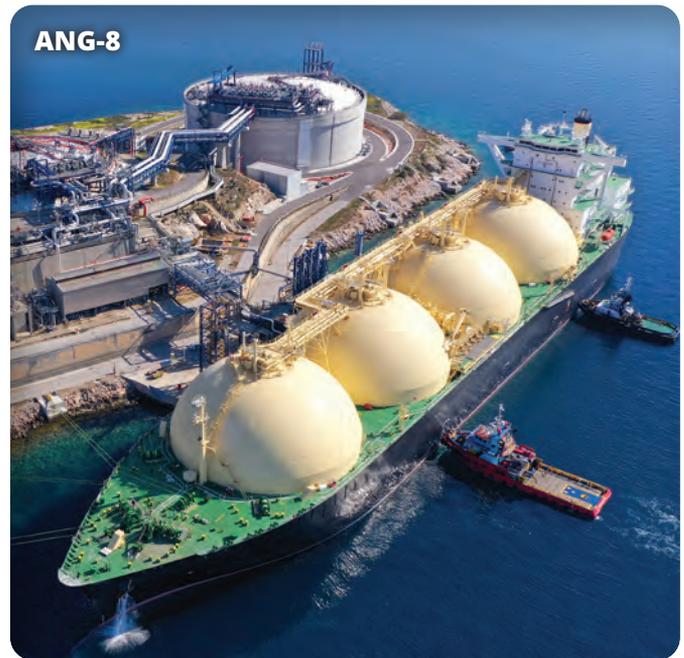
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**ABOUT THE COVER:** The demand and need for U.S. natural gas gains momentum. (Source: AlexLMX/Shutterstock)

# ALL EYES ON NATURAL GAS INVESTMENT

Strong demand and environmental awareness draw capital to the upstream and midstream sectors.

ARTICLE BY  
**GREGORY DL  
MORRIS**  
CONTRIBUTOR

**N**atural gas and associated investment opportunities are garnering a lot of attention from a very broad audience, according to Brad D. Nelson, managing director in the energy investment banking group at Stephens Inc.

"We believe this momentum has been building for a long time as natural gas has evolved from a local to a global commodity. We also believe the interest, demand and need for natural gas was occurring well before the Ukraine-Russia crisis," Nelson said.

"Pre-COVID, the acronym of the decade was ESG. Post-COVID, ESG is and will continue to be front and center for the conventional energy industry. More importantly, ESG is a factor in capital allocators' decision-making. As we all know, natural gas is much cleaner and more environmentally friendly than oil and other conventional energy sources."

The U.S. is well set to be a major player, now and long term, in the global natural gas industry, Nelson explained. "Generally speaking and compared to other countries, the U.S. contains one of the largest resources for natural gas in the world. In terms of reserves, the U.S. ranks fifth or sixth, but the U.S. is in the top one or two countries in the world based on production and consumption."

In summary, there are three primary reasons why people are allocating capital to natural gas, according to Stephens. First, gas is cleaner than other conventional energy sources. Second, the overall macroeconomic outlook for gas is set for

the commodity for the foreseeable future. Global demand is continuing to increase and supply is struggling somewhat to keep up with the pace. And third, many producers and investors are able to generate money and provide healthy returns while investing in an environmentally acceptable conventional commodity.

"Private capital continues to be the driving force behind investment across the natural gas value chain," said Nicholas Gole, senior managing director at Macquarie Capital. "While there are probably fewer investors in the space now, those of us who are still investing in the sector are seeing a lot of attractive opportunities."

In terms of capital allocation, Gole said, "We have not seen the same level of greenfield



**"We believe this momentum has been building for a long time as natural gas has evolved from a local to a global commodity."**

—Brad D. Nelson,  
*Stephens Inc.*

activity outside of LNG, but there is still significant interest from private investors, particularly in the context of gas supply for Gulf Coast liquefaction expansion.

"Midstream organic growth largely targeting value chain extension with multiple fee events from wellhead to water are receiving the majority of growth spending," Gole said.

Further, he noted that "strategics are still exercising capital discipline but will be opportunistic around established assets with compelling industrial logic and definable synergies. Consolidation is also key among public strategics."

At the same time, some banks are showing renewed interest. "While banks have stepped back from lending to the space during the downturn, it seems like some are coming back cautiously," said Gole. "And some have decided to exit the space entirely."

### Upstream, midstream activity

Geographically, there has been an increase in activity in basins that were marginal at lower gas prices. Takeaway from Appalachia is still constrained, which is allowing for other basins such as the Mid-continent to increase activity materially, albeit from a smaller base.

"On an absolute basis," Gole said, "key basins close to demand, like the Haynesville and Eagle Ford, have benefited, as has the Permian, which has seen significant gas debottlenecking in recent years. On the upstream front, we expect further consolidation to wring efficiencies and capitalize on new demand-pull sources, such as liquefaction—particularly with proximity to the Gulf Coast. We also expect significant newbuild residue gas pipeline capacity connecting the Permian to emerging liquefaction hubs along the Texas and Louisiana Gulf Coast."

In midstream, "existing capacity is likely not sufficient to accommodate growth and we expect, in addition to the recently announced Matterhorn Pipeline, several incremental Gulf Coast pipeline final investment decisions through 2030 to accommodate global gas demand," said Gole.

Continued investment in midstream "is certainly needed," he continued. "On the gathering and processing side, it seems that some operators are investing capital in relatively lower return midstream buildout that retains molecules across a captive system with multiple fee events, rather than pursuing step-out greenfield growth. We expect this may change if the current pricing environment continues and operators decide to divert more capital to higher return upstream capex to allow themselves the ability to still return cash flow to shareholders."

At the policy level, capital providers are beginning to differentiate between oil and gas, in terms of carbon in addition to the existing factors. "We



**"While there are probably fewer investors in the space now, those of us who are still investing in the sector are seeing a lot of attractive opportunities."**

—Nicholas Gole,  
Macquarie Capital

are certainly focused on the carbon footprint of the projects that we invest in and are looking for responsible partners with strong track records for lowering the carbon impact of their operations and looking for ways to continue to improve their overall carbon footprint," said Gole.

"Private equity has been consistent in its investment in the segment," said Stephen Ellis, senior equity analyst at Morningstar. "I don't see any change this year. Public investment has picked up a little bit, especially driven by merger and acquisition activity. Geographically, the consolidation in the Permian remains the biggest and best opportunity in terms of investment for producers and takeaway."

Today, most deals are done in cash plus a credit facility, said Ellis. "They used to be roughly 50:50 debt to equity, but these days they are usually announced as an 'all-cash' deal while the parties work out ways to finance the transaction. That can be a combination of debt and stock. What has made the difference, both upstream and midstream, is that there is so much cash being generated. They can use that to close the deal and work out any financing later."

As examples of both trends, he noted Targa Resources Corp.'s acquisition of Lucid Energy Group, a \$3.55 billion all-cash deal, as well as Whitecap Resources Inc.'s acquisition of XTO Energy Canada ULC from Exxon Mobil Corp. and Imperial for C\$1.9 billion (US\$ 1.48 billion)—again all cash.

Those structural preferences should not overshadow the fact that "banks are willing to finance gas," said Ellis, "whether that is exploration and production or midstream. That is especially true because midstream teams are being more selective. They tend to be focusing on developments that remain with Texas, or one of the other states that are favorable to the industry, and avoiding interstate jurisdictions to the extent possible. There are a few exceptions, but pipelines

generally have become hesitant to cross state lines.”

Beyond the Permian, other plays receiving investment attention are the Haynesville Shale as well as the Marcellus and the Utica in Appalachia, the latter with the acknowledgement of “chronic takeaway constraints,” Ellis added. “The Mountain Valley Line will be filled quickly.”

EQT Corp. said it expects the long-delayed Mountain Valley Pipeline from West Virginia to Virginia, the last big gas pipe under construction from Appalachia, to enter service in the fourth quarter of 2023.

### War and climate change

For several years, there has been reluctance in some quarters to invest in hydrocarbons for social and environmental reasons. That has been especially true in public markets. Nevertheless, natural gas has regained some credibility as the lower-carbon bridge fuel to a low-carbon future. Natural gas has also expanded to fill the available economic space as the world scrambles to restructure its energy mix without Russian hydrocarbons.

“There is certainly no certainty as to when the war in Ukraine will end,” said Ellis, “but there is growing certainty that the longer it continues, the more the European Union moves away from Russian energy—gas, oil, even uranium—and the more structural those changes become. Even as the new plans rely heavily on renewables, there is also a reliance on gas as the bridge fuel.”

That said, investors remain widely divergent on their willingness to invest in hydrocarbons, and the industry, both upstream and midstream, is widely divergent in its response to that pressure.

“I have reviewed the portfolios of the U.S. and Canadian midstream companies that I cover,” said Ellis, “which includes all the major names. About a third of them had committed to a net-zero carbon emissions policy by 2050. Another third had no program or even goal stated. And a third were somewhere in between. At the very least the sector could work on some clarity.”

For example, he noted that there has been a significant shift in the industry’s attitude about flaring.

“There is very much a focus on turning flared or released gas into revenue,” said Ellis. “The Mountain Valley Pipeline has agreed to be carbon neutral, using offsets. That is one notable effort to address the environmental issues raised by investors and the public.”

That is a sharp contrast to late 2019 when flaring in the Permian became a national issue. Williams Cos. sued the Texas Railroad Commission after the regulators allowed Exco Operating Co. to flare casinghead gas even though the Exco wells in the field were connected to Williams gathering lines.



**“There is very much a focus on turning flared or released gas into revenue.”**

—Stephen Ellis,  
*Morningstar*

In early 2020, Pioneer Natural Resources Co. CEO Scott Sheffield called on energy investors to sell shares or pull funding from companies that have high rates of natural gas flaring.

### Price decoupling: done and dusted

Another shift that has taken place quietly is how gas and oil prices have drifted apart. There was a time when producers, investors and analysts were watching for “decoupling” as a turning point, but Ellis noted that “with Henry Hub pricing, destination flexibility for LNG and oil-linked contracts just expiring,” the decoupling has been more evolution than revolution.

“We believe that oil and gas has been decoupled for a long time,” said Stephens’ Nelson. “Other than using a drilling rig to extract the two commodities, we believe that to be the only similarity today. Some source rock contains both commodities, but the primary supply is in very different parts of the country,” he continued.

“For oil, we think of the Permian, Bakken, Eagle Ford and Midcontinent as the key supply basins. For natural gas, the primary plays are the Marcellus, Utica and Haynesville. The same could be said for the demand side of the equation; end-use markets are very different.”

Transportation fuels and lubricants are among the major end-use markets for oil, as are numerous commodity and specialty chemicals. Power generation is a major demand for gas, as are heating and cooling. NGL is the primary feedstock for commodity thermoplastics.

Gole at Macquarie suggested that “to an extent, oil and gas prices have decoupled but are still highly correlated. While the U.S. seems to be the marginal supplier for each at the moment, we are now seeing overlapping but differentiated demand bases that are truly global in nature and will continue to drift independently as incremental liquefaction continues to knit the global gas value chain together.”

To that point Gole said, “We expect that more LNG liquefaction FIDs [final investment decisions] will keep long-term pricing attractive for North American producers and midstream companies while significantly reducing the spot price available to customers in Europe and Asia, relative to what is being paid today. This should make gas an important part of the energy transition for a long time to come.” 



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# THE RISE OF ASSOCIATED GAS

Associated gas is a crucial part of meeting the growing energy demand as the U.S. amps up its exports.

ARTICLE BY  
**JENNIFER  
PALLANICH**  
SENIOR EDITOR

**A**ssociated gas will drive North American gas production in the near term, positioning it to serve as a bridge fuel through the energy transition.

However, associated gas can be a mixed blessing, prompting operators to wrestle with choices on what to do about the additional production. Each choice has its pros and cons, and geopolitical uncertainty underlies major long-term investments that operators consider.

Wood Mackenzie defines gas production driven by oil economics to be associated gas and gas production driven by gas economics to be dry gas.

According to WoodMac, associated gas production in the Lower 48 is climbing, primarily due to increased gas production from the Permian Basin. Eugene Kim, research director for WoodMac's North America gas team, said the "tremendous growth" in production of associated gas from the Permian dwarfs associated gas output from all the other basins.

While associated gas output in the Permian was hitting about 4 Bcf/d in 2015, the basin currently produces over 15 Bcf/d of associated gas and is expected to produce more than 19 Bcf/d by the end of 2024, Kim said. In fact, he expects Permian associated gas production to continue growing into the 2040s, while other Lower 48 areas will start to plateau or decline by 2030 or 2035.

Alaska, Kim said, is producing less than 1 Bcf/d of associated gas, with the majority of that coming from Prudhoe Bay.

In the Gulf of Mexico, associated gas is down to about 2 Bcf/d from its heyday with output of more than 14 Bcf/d of gas, he said. Some of it was dry gas, while some was associated gas.

Earlier this year, the Bureau of Offshore Energy Management released its 2022 to 2031 U.S. Outer Continental Shelf Gulf of Mexico region oil and gas production forecast, which predicts associated gas production in the Gulf of Mexico will remain fairly steady during the next decade.

Most of the associated gas in the Gulf of Mexico is from deepwater fields, where dry gas wells are generally uneconomic to develop.

## North American gas market

Carol Johnston, vice president of energy, utilities and resources at IFS, said demand for natural gas is increasing because of its role as a backup energy source on the path of the energy transition.

"That is creating more demand and market opportunity" but also causing prices to fluctuate, she said.



**“Associated gas runs off of the oil economy. It’s not totally free, but it’s the lowest cost option.”**

—Eugene Kim,  
Wood Mackenzie

The overall North American gas market is set to expand quite a bit, including through export growth, and associated gas is needed to support that, according to Kim

"Look at how much new gas is required every year to come to the market ... to make up for existing production declines and market expansion," he said.

He projects needing 17 Bcf/d of new gas production on average during 2023 to 2025 to meet decline and expansion.

"That's a tremendous amount of gas considering we're now at 97 Bcf/d" of total gas output from the U.S., he said. "Every year, we need to drill enough to produce that 17 Bcf/d that the market will require."

And of course the mix of dry and associated gas that is added will affect the price of Henry Hub.

"Associated gas runs off of the oil economy. It's not totally free, but it's the lowest cost option," Kim

said. "The larger the amount of associated gas produced, the lower the price of Henry Hub will be."

Johnston said two main factors constrain associated gas production. If the price is not high enough, companies may throttle back production. On the other hand, infrastructure can be an issue, she said.

Further, she said some operators are reluctant to enter large multiyear projects due to geopolitical uncertainty or regulatory or permitting hurdles.

The Biden administration is pursuing renewable energy sources and moving away from fossil fuels.

The last offshore oil and gas lease sale was in November 2021, and a court vacated it. No offshore oil and gas lease sales are being held in 2022, and there is the potential that only one offshore lease oil and gas sale will occur in 2023. Offshore wind lease sales are happening, however, with sales in New York Bight and Carolina Long Bay earlier this year and plans for lease auctions in the Gulf of Mexico and offshore California.

### Working around flaring reductions

In 2016, the U.S. endorsed the World Bank's Zero Routine Flaring by 2030 initiative, and in 2020, U.S. regulators made it more difficult for operators to routinely flare associated gas production.

Historically, operators routinely flared associated gas as a safe method of disposal; however, flaring is determined as wasteful and emits greenhouse gases.

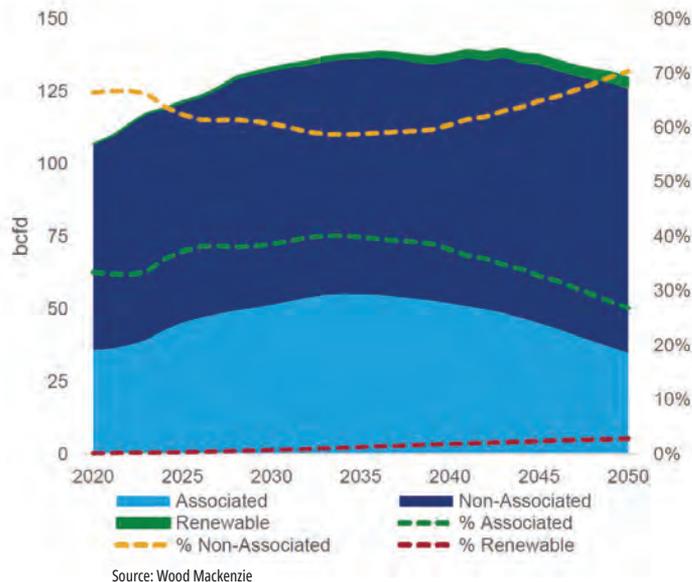
"There is still sizable flaring going on in the U.S.," Kim said.

Efforts to reduce flaring are helping, however.

According to the World Bank, in 2021, the top 10 flaring countries on an absolute volume basis accounted for 75% of all gas flaring and 50% of global oil production. At No. 4, in terms of absolute volume flared, the U.S. has been in the top 10 list for the past decade. But it has a distinction from other long-term members of this list, such as Russia, Iraq, Iran, Venezuela, Algeria and Nigeria, in that it is the only country to have successfully reduced absolute flare volumes while increasing production over the past decade. The U.S. decreased its flaring intensity by 46% and achieved an 8% reduction in terms of absolute volume over the decade, according to the World Bank.

Although flaring is off the table as the primary means of associated gas disposal, operators do have other options.

### North American Gas By Type



Source: Wood Mackenzie

**Wood Mackenzie projects production of associated gas to continue to rise through 2035.**

Associated gas can be gathered, processed and delivered down the supply chain, or stored, Kim said, but these options require infrastructure. It can also be reinjected in the reservoir to maintain pressure, such as in some Alaskan fields, although this also requires infrastructure.

"That whole process takes money to do. You need appropriate production systems to recycle and reinject it into the reservoir, which is an added cost to the producer," Kim said. "For a lot of new wells, we're not seeing as much effort to recycle that gas."

Associated gas can be used in the field for fuel purposes, he said, such as running compressors using associated gas instead of diesel or carrying out small-scale LNG liquefaction. And some producers are even talking about using excess gas to power gas turbines for bitcoin mining.

"There are some novel uses of excess gas production," Kim said.



**"The role of natural gas as a backup energy source 'is creating more demand and market opportunity.'"**

—Carol Johnston, IFS

# US CONTINUES TO RISE AS KEY LNG EXPORTER

The U.S. climbs the ranks to become one of the world's largest LNG exporters after recent liquefaction expansions.



**Global LNG trade in 2021**  
"reached an all-time high of 372.3 mtpa, according to the IGU."

AERIAL-MOTION / SHUTTERSTOCK

ARTICLE BY  
**PIETRO DONATELLO PITTS**  
ENERGY REPORTER

**T**he U.S. became the world's largest LNG exporter in the first half of 2022, thanks to recent liquefaction additions and high demand in Europe, the U.S. Energy Information Administration reported in July.

Strong demand for LNG and significant U.S. aspirational liquefaction capacity in the pre-final investment decision (FID) stage will assure the U.S. maintains its top-tier ranking for years to come, according to a International Gas Union (IGU) report.

Between January and April, new liquefaction capacity additions allowed Australia to boost its capacity to 87.6 million tonnes per annum (mtpa), while similar additions allowed the U.S. to boost its capacity to 86.1 mtpa. The growth pushed the North American country ahead of Qatar with its 77 mtpa and into the second position.

LNG trade, especially U.S. LNG exports, continues to grow amid geopolitical issues in Ukraine that threaten energy security for numerous countries

worldwide. At the same time, a continued global push to decarbonize economies has seemingly jettisoned a move away from fossil fuels such as oil and coal and to low- and zero-carbon sources like natural gas.

As of April, the global LNG trade was connecting 19 exporting markets with 40 markets equipped with LNG import facilities. China was the largest LNG importer in 2021, buying 79.3 mtpa in 2021, while Japan imported 74.3 mtpa. European LNG imports were 75.1 mtpa in comparison.

Global liquefaction capacity reached 459.9 mtpa in 2021, up 6.9 mtpa compared to 2020. The average global utilization rate was 80.4% in 2021, up compared to 74.6% in 2020 due to economic recovery following the lifting of COVID-19 restrictions, a prolonged European winter and an epic drought in Brazil, all which boosted demand for LNG, the IGU revealed in July in its "2022 World LNG" report.

LNG has evolved as a vital energy source to "secure and reliable functioning of energy systems around the world ... a vital tool for controlling emissions, particularly as the crisis in energy supply is forcing even the most climate-conscious economies to turn back to coal, wiping out emission reductions achieved in recent years," the IGU said, adding that "addressing supply constraints is going to be critical to energy security and economic stability in the world."

### LNG trade

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

To no surprise in 2021 Australia retained its position as the world's largest LNG exporter shipping 78.5 mtpa, followed by Qatar (77 mtpa), the U.S. (67 mtpa) and Russia (29.7 mtpa), and in that order. Effectively, these top four countries controlled 67.8% of the LNG export market share in 2021.

Impressively, the U.S. added 22.3-plus mtpa of capacity in 2021, up 50% from just 44.8 mtpa in 2020. The increase in capacity was "driven by increased utilization at five large liquefaction trains that started commercial operations in 2020 (Cameron LNG T2-T3, Corpus Christi T3, Freeport LNG T2-T3)," according to the IGU.

"The Atlantic Basin LNG markets grew in importance throughout 2021, with depleted gas storage in Europe and lower-than-average Russian pipeline deliveries driving Europe's evolution from the market of last resort to a premium LNG buyer," the IGU said.

### Aspirational liquefaction capacity

The present-day geopolitical situation in Russia-Ukraine has boosted the appetite for new liquefaction projects despite headwinds such as access to financing as lenders look to reduce their

exposure to fossil fuel investments as they instead eye clean energy projects.

The global decarbonization push will force the LNG industry to seek solutions to reduce emissions in the liquefaction process and across the entire LNG value chain. But "it is also important to have clarity and consistency in the policy environment, which impacts financial risk and liquidity provision," the IGU said.

Currently, 1,034.5 mtpa of aspirational liquefaction capacity is in the pre-FID stage, and the majority of that capacity is located in the U.S. (387.6 mtpa), Canada (210.4 mtpa) and Russia (136.7 mtpa). Another 52.2 mtpa corresponds to developments in Africa, which if they materialize could see the emergence of a key LNG export region, while Australia has 45.5 mtpa of liquefaction capacity currently in the pre-FID stage.

**“LNG trade, especially U.S. LNG exports, continues to grow amid geopolitical issues that threaten energy security for numerous countries.”**

The U.S. accounts for 37.5% of the total aspirational liquefaction capacity in pre-FID stage, followed by Canada (20.3%) and Russia (13.2%).

The growth in U.S. shale gas production in recent years is driving proposed projects such as Venture Global LNG's Plaquemines LNG (21.6 mtpa) and Driftwood LNG (27.6 mtpa), both located in Louisiana.

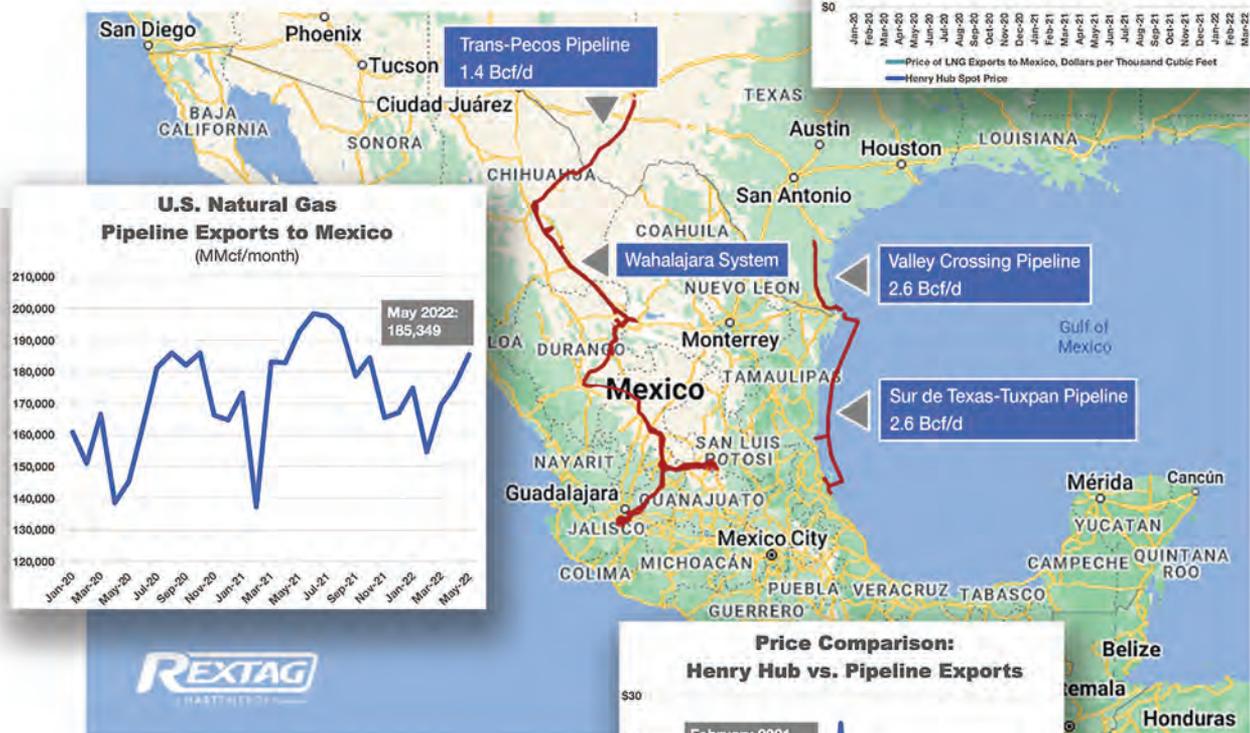
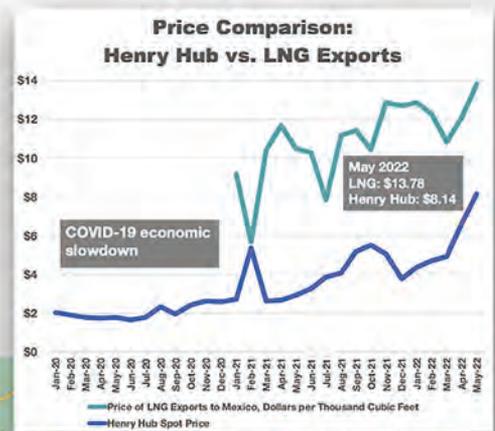
"While most operational U.S. LNG projects are brownfield conversion projects, the currently proposed U.S. LNG projects are mainly greenfield projects that consist of multiple small- to mid-scale LNG trains delivered in a phased manner," the IGU said. "This provides flexibility in securing long-term offtakers and increases competitiveness in project economics through modular construction."

These developments come as the Middle East, and especially Qatar, looks to drastically increase its liquefaction capacity with the recent FID taken by QatarEnergy related to the North Field East, the world's largest LNG project. The project will boost Qatar's LNG capacity to 110 mtpa from 77 mtpa by 2026 and involves the construction of four new LNG mega-trains with a capacity of 8 mtpa each. 

# CROSS-BORDER PIPELINES DRIVE INCREASE IN NATURAL GAS EXPORTS TO MEXICO

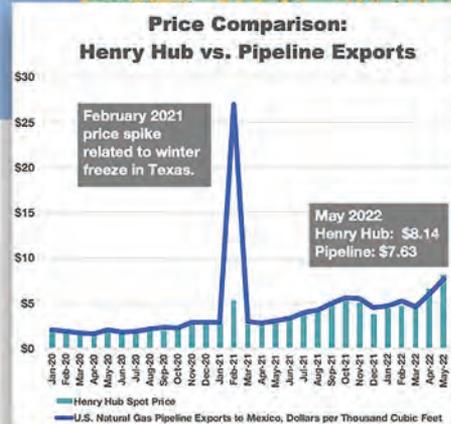
U.S. exports of natural gas to Mexico eased somewhat after a record June 2021, which saw shipments above 7 Bcf/d occur multiple times, the high mark set on June 17 of 7.4 Bcf. Since February 2022, however, exports have crept up each month and totaled about 176 Bcf in April for an average of about 5.9 Bcf/d.

Two cross-border pipelines have driven growth in U.S. gas exports to Mexico. Energy Transfer Partners' Trans-Pecos Pipeline originates at the Waha Hub in the Delaware Basin and delivers natural gas to the U.S. border at Presidio, Texas, into the



(Source: U.S. Energy Information Administration, Thomson Reuters, Rextag)

Wahalajara pipeline system. On the Gulf Coast, Enbridge Inc.'s Valley Crossing Pipeline on the Texas side of the border delivers gas to the Sur de Texas-Tuxpan Pipeline in Mexico, which is operated by a unit of TC Energy Corp.



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# QATAR ENERGY ENLISTS BIG OIL FOR MEGA LNG PROJECT

State-owned QatarEnergy has tapped supermajors from across the globe to lend a hand in the development of its LNG project in Qatar's North Field East.

ARTICLE BY  
**PIETRO  
DONATELLO PITTS**  
ENERGY REPORTER

State-owned QatarEnergy has enlisted European companies TotalEnergies SE, Eni SpA, Shell Plc as well as American companies ConocoPhillips Co. and Exxon Mobil Corp. to participate in the four-train, \$28.8 billion North Field East (NFE) expansion project. The project is the world's single largest LNG expansion and will boost Qatar's LNG production by 32 million tonnes per annum (mtpa) by 2026.

The project comes as global energy markets struggle to increase supply impacted by Russia's invasion in Ukraine. The initial project and others in the Middle Eastern country offer significant opportunities for U.S. companies looking to offer products and services related to the LNG production process, according to the Washington-based International Trade Administration (ITA).

NFE will boost Qatar's LNG production capacity to 110 mtpa in 2026 from 77 mtpa currently and in so doing see Qatar solidify its position as the world's top LNG exporter. This expansion, when coupled with the two-train, 16-mtpa North Field South (NFS) expansion project, will boost Qatar's total LNG production to 126 mtpa, according to QatarEnergy.

Through April 2022, Australia's reported LNG export capacity was 87.6 mtpa, which ranked the country as the world's largest exporter, while the U.S., with a capacity of 86.1 mtpa, ranked second, according to the International Gas Union's (IGU) annual LNG report released in July. Qatar, with a LNG export capacity of 77 mtpa, ranked third on IGU's list.

NFE will provide much-needed low-carbon energy supply to the world market. Beyond its massive price tag, the NFE expansion will employ

high health, safety and environmental standards, including carbon capture and sequestration to reduce the project's overall carbon footprint to the lowest levels possible, the Qatari company announced July 5 in a press statement.

Discovered in 1971, North Gas Field lies off the north-east shore of the Qatar peninsula and spans 6,000 sq km, equivalent to about half the land area of Qatar. The field has total recoverable gas of more than 900 Tcf, equivalent to approximately 10% of the world's known reserves.

Qatar's exports of LNG, crude oil and petroleum products make up the bulk of the government revenue, while earnings from the hydrocarbons sector account for more than 50% of the country's total government revenues, the ITA said.

## Five NFE JVs

Opportunities to invest in Qatar's LNG sector commenced in May 2021 with the lifting of a self-imposed 12-year moratorium on further developments related to LNG extraction from the country's North Field. As of July 2022, QatarEnergy has seemingly jettisoned development efforts with the signing of five joint venture (JV) deals in Doha with partners from the U.S., U.K., Italy and France. Collectively, the five JVs hold a 100% interest in NFE, with QatarEnergy holding the majority interests.

On July 5, an agreement was signed by QatarEnergy (75% working interest) and U.K.-based Shell (25% working interest) to form a new JV that will hold a 25% interest in the NFE project. The "announcement marks the successful conclusion of the selection of our international energy company partners in the North Field East

**Joint Ventures In Qatar’s North Field East (NFE) Expansion Project**

Date Signed	Partners (Working Interest)	Interest in NFE
July 5	Shell Plc (25%) QatarEnergy (75%)	25%
June 21	Exxon Mobil Corp. (25%) QatarEnergy (75%)	25%
June 20	ConocoPhillips Co. (25%) QatarEnergy (75%)	12.5%
June 19	Eni SpA (25%) QatarEnergy (75%)	12.5%
June 12	TotalEnergies SE (25%) QatarEnergy (75%)	25%
<b>Total</b>		<b>100%</b>

Source: QatarEnergy

project,” the Minister of State for Energy Affairs Saad Sherida Al-Kaabi said in a press statement released by QatarEnergy.

On June 21, an agreement was signed by QatarEnergy (75% working interest) and Irving, Texas-based Exxon Mobil (25% working interest) for a JV that will hold a 25% interest in the NFE project. “We are collaborating with QatarEnergy on North Field East to accelerate the production of secure,

affordable and cleaner energy our world needs,” Exxon Mobil chairman and CEO Darren Woods said in a company statement.

An agreement was signed by QatarEnergy (75% working interest) and Houston-based ConocoPhillips (25% working interest) on June 20 for a JV that will hold a 12.5% interest in the NFE project. “Our collaboration will help produce cleaner energy to meet growing global demand and achieve a realistic energy transition toward achieving our climate change objectives,” Qatar Energy Minister Saad Sherida Al-Kaabi said in a press statement released by QatarEnergy.

On June 19, an agreement was signed by QatarEnergy (75% working interest) and Rome-based Eni (25% working interest) for a JV that will hold a 12.5% interest in the NFE project. The agreement marks Eni’s initial entry into Qatar’s upstream sector and “is a significant milestone for Eni and fits our objective to diversify into cleaner and more reliable energy sources in line with our decarbonization strategy,” Eni CEO Claudio Descalzi said in a press statement released by QatarEnergy.

On June 12, an agreement was signed by QatarEnergy (75% working interest) and Paris-based TotalEnergies (25% working interest) to form a new JV that will hold a 25% interest in the NFE project. “It is good news for the fight against climate change as gas and LNG are key to support the energy transition, and notably the shift from coal to gas in many countries,” said TotalEnergies chairman and CEO Patrick Pouyanné in a press statement released by QatarEnergy. 

**The North Field East expansion project will boost Qatar’s LNG production capacity to 110 mtpa in 2026 from 77 mtpa.**



ALEXIMV/SHUTTERSTOCK.COM

# QUANTIFYING RSG

Producers are going above and beyond regulatory requirements by certifying their natural gas.



ARTICLE BY  
**JENNIFER MARTINEZ**  
ASSOCIATE EDITOR

**A**s stakeholders begin to pay more attention to ESG factors when making investment choices, producers are looking for ways to quantify the practices and decisions they make in the field to optimize and improve their ESG performance. Some are seeking third-party certification of their responsibly sourced gas (RSG) to demonstrate their ESG practices to their stakeholders.

"Investors, banks and insurers understand that ESG/climate risk is financial risk," said Jennifer Stewart, principal advisor to Equitable Origin, an organization that provides independent certification of ESG practices. "Certification serves as external validation for these stakeholders that a company is doing what they say they are doing in their investor materials and sustainability reports."

Investors across the board are seeking transparency into the products they buy, she explained. "The climate and ESG attributes need to be measured, quantified, verified and reported and then validated by a qualified, independent third party."

The financial motivation to demonstrate ESG practices through RSG certification puts pressure on producers, with some positing that RSG certification may determine if a producer can sell their gas in the future.

"The theory here is that at some point in time, certified gas may become 'table stakes,' meaning that in order to sell gas at market price, a producer will need evidence that it was produced responsibly," Stewart said. "If the gas is not certified, a producer may not be able to respond to an RFP [request for proposal], or the gas will sell at a discount."

## Certification challenges

The strong push toward active and meaningful

ESG practices and certified RSG comes from the market, Stewart explained. But the transition hasn't been without its challenges.

Stewart lists cost, both in terms of cash and human resources, as a significant barrier.

"Certification under any of the current certification bodies is a robust process and requires significant data and document gathering, field visits, interviews, etc., so it creates a drain on already overworked staff," she said. "The [Equitable Origin] certification process is very inexpensive, but there is some upfront cost to hire an independent assessment body."



**"Investors, banks  
and insurers  
understand that  
ESG/climate risk  
is financial risk."**

—Jennifer Stewart,  
Equitable Origin

Another significant challenge is that despite being market driven, "the market doesn't know what it wants yet."

"It knows it wants clean, responsibly produced hydrocarbons," Stewart said. "But it is not dictating how that is evidenced, so producers are trying to meet the demand as best they can with certification."

A lack of standardization with regards to certification processes causes confusion as to which certifiers a producer should employ, she explained.

That confusion also affects the buying and trading of certified RSG. "What does not exist today

is an exchange," Stewart said. "[In other industries] there's exchanges where you can buy the digital attribute to the electron. There's no current exchange right now where certified volumes are listed on, so the volumes are listed on a registry right now to keep everyone accountable."

### Environmental stewardship

Smart financial decisions drive efforts to certify producers' ESG practices and responsible sourcing, but environmental concerns also play a role in the increased volume of third-party certified RSG being bought and sold.

In a July op-ed for HartEnergy.com, Chris Romer, co-founder and CEO of Project Canary, a Denver-based ESG data analytics firm that helps companies measure and minimize emissions, pointed out that the technology and means to tackle some of the main causes of global warming are here already.

He specified eliminating fugitive methane emissions as an obtainable and impactful goal. "It's not as well-known as CO<sub>2</sub> and not as virtue-signaling friendly as metal straws, but it is the best step we can take," he said.

Romer's words come on the tail of the Supreme Court ruling in June regarding the authority of the U.S. Environmental Protection Agency (EPA) to regulate greenhouse-gas emissions from existing coal- and gas-fired power plants. The ruling restricted the sweeping regulatory powers granted to the EPA under the Clean Air Act anti-pollution law, limiting the EPA's ability to create new regulations or enforce older ones.

"We have to act now," Romer said. "The urgency is only increasing. Regulation will not be the salve we were hoping for.

"We must now look to markets and consumers to solve this problem," he said.

Stewart argues that the push for certifying RSG and other ESG practices already comes from the market independent of regulations, and the latest Supreme Court ruling will not have much of an effect on the existing ESG and RSG culture.

"Right now, the whole notion of certification is based around producers or operators going beyond regulatory requirements," Stewart said. "[Producers] only have to inspect existing facilities two times a year in order to meet regulatory requirements. I don't know this for a fact, but every producer that has gone through certification so far probably conducts field-based inspections on all of their assets, new and existing, and probably does it on a quarterly or monthly basis.

"There's no regulatory requirement to do this," she said. "It's a way of recognizing that only inspecting your sources two time a year, and not inspecting some of them at all. ... It's not the right thing to do from an environmental stewardship perspective."

Stewart explained that many producers are stepping up and going above and beyond regulatory

requirements, independent of federal oversight.

"I think this is because they recognize that they have to do a lot," she said. "Those that are seeking certification are already good actors." 

## HOW TO SELL A HYDROCARBON

Equitable Origins assigns certificates to a volume of RSG which are then listed on a registry maintained by MiQ using a process similar to bitcoins and other cryptocurrency in order to monetize the certified gas that their clients produce and help those producers realize a profit off of the certification. These certificates are unique and finite, which ensures that the digital attributes of the hydrocarbons are sold only once.

But how does one differentiate certified RSG from regular gas?

Principal advisor to Equitable Origins Jennifer Stewart provides an example using a purchase by Bloom Energy of EQT Corp's certified gas:

- Bloom Energy in California reviewed the MiQ registry to see what volume of certified gas was available to purchase.
- Bloom Energy selected to purchase certified gas from EQT in Pennsylvania based on what was sold in the registry.
- Bloom Energy did not buy the physical gas from EQT but rather the digital attributes of the gas assigned in the MiQ registry.
- EQT sold its certified gas physically as normal and sold the environmental attributes to Bloom Energy.
- Once the specific certificate differentiating EQT's volume of certified gas has been purchased, the certificate is expired and cannot be sold again.

"Even if it's just a penny, EQT was able to realize a penny extra on its gas via the registry," Stewart said.

The market for certified gas is growing, but it still has elements that need to be established in order for the market to fully develop.

"What does not exist today is an exchange," Stewart said. "In the carbon credit market or with solar and wind, there's exchanges where you can buy the digital attribute to the electron."

Since there is no current exchange where certified volumes are listed on an exchange, those volumes are currently listed in MiQ's registry in order to ensure the authenticity of the gas and avoid double counting.

# RNG GROWTH ACROSS THE US

Renewable natural gas (RNG) has seen significant growth across the continent, according to two of the largest RNG producers in the U.S.

ARTICLE BY  
**MADISON RATCLIFF**  
ASSOCIATE EDITOR

**A**s the energy sector looks for any opportunity to decarbonize its operations, renewable natural gas (RNG) is becoming an increasingly attractive option for gas consumers looking for a product with net negative emissions.

Major RNG producers across the U.S. have noted the continual growth of the gas, and many don't expect that growth to end in the near future.

One of the largest producers of RNG in North America, TC Energy flows approximately 30 Bcf annually to its customers through a network of about a dozen facilities, as well as thousands of miles of pipelines.

According to Roger Williams, director of business development at TC Energy, the company expects to double its development to 15 Bcf this year.

"Last year, Trans Canada touched one in four gas molecules in the United States, so we're a pretty big transporter of regular natural gas," Williams told Hart Energy. "To that end, we've got a pretty large footprint, 40,000 miles domestically. And so our footprint is really well positioned to be in the areas where RNG is developed."

Houston-based Archaea Energy currently has 12 operational RNG projects and 19 electric facilities across the U.S. In 2021, the company's full year production was 5.7 MMBtu of RNG.

In addition to its current facilities, Archaea has 85 developmental projects in the works, which are anticipated to raise the company's RNG production from 5.7 MMBtu to 50 MMBtu a year upon completion.

"Archaea Energy is one of the larger producers of renewable natural gas in the United States," Megan Light, vice president of investor relations at Archaea Energy, told Hart Energy. "We are primarily focused on landfill gas-to-RNG projects, but we

also currently have landfill gas-to-electric projects in our portfolio that we expect to convert over to RNG projects."

## Localization

In the past, a critical barrier to local RNG use, according to Williams, was a historical reputation that the gas quality of RNG was poor.

"If you have poor gas quality, and you're putting a small amount of gas onto a large pipeline, when it blends, it becomes less of an issue," he said. "But if you have poor gas quality, and you want to inject into a smaller pipeline that may go directly into someone's home or business, then you have a much larger concern."

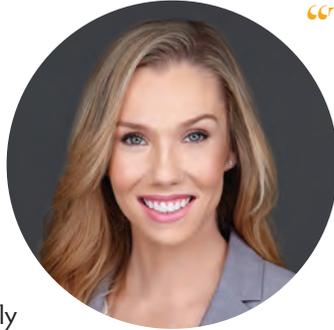
However, as the quality of RNG and its production continues to rise, so does its trustworthiness, as well as the interest it has garnered from local distribution companies, who are becoming willing to take gas from RNG developers directly into their systems, Williams explained.



**"One of the emerging trends we're seeing is local distribution companies having increased willingness to accept this gas directly into their system."**

—Roger Williams,  
TC Energy

“One of the emerging trends we’re seeing is local distribution companies having increased willingness to accept this gas directly into their system,” he continued. “They’re being incentivized at the state and municipal levels with grants and subsidies to help accommodate some of these intervention costs, which also would’ve been a deterrent to them.”



**“There’s this growing pool of demand for entities that want to use RNG, which is great news because it really outstrips supply, from a supply-demand dynamic.”**

—Megan Light,  
Archaea Energy

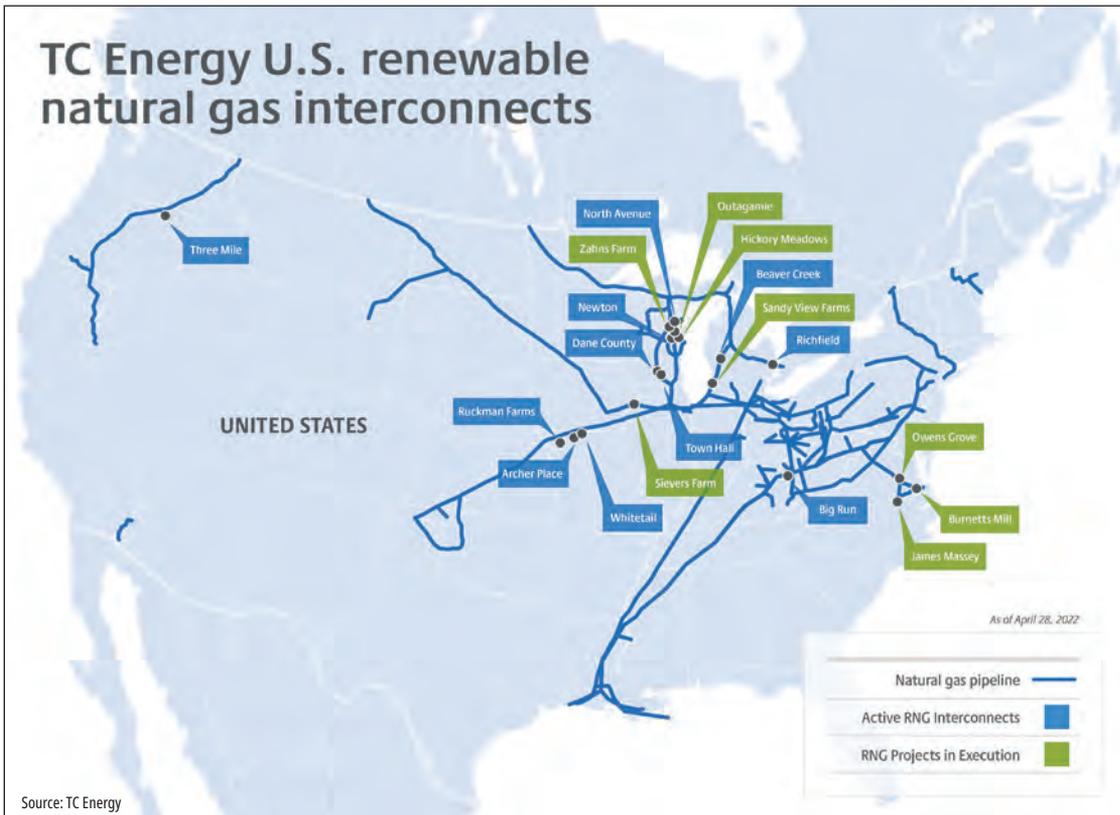
In a local capacity, RNG has primarily been used in the transportation sector in the past in the U.S., but its uses have grown to include power generation, thermal generation and potentially sustainable aviation fuel, Archaea’s Light said.

“Over the past couple years, we’ve seen the development of what we call the voluntary market for RNG,” she added. “That is a market that is driven by decarbonization initiatives in our target customers. In that voluntary market is any entity that uses natural gas in its infrastructure today and either has a mandate or a goal to decarbonize.”

“There’s this growing pool of demand for entities that want to use RNG, which is great news because it really outstrips supply, from a supply-demand dynamic,” Light continued.

Light predicts that local uses of RNG will expand beyond its current capabilities due to the positive impact it has on the environment and based on its current rate of growth. From a sustainability standpoint, she said, RNG makes more sense to use than traditionally produced natural gas in the long term.

“When we look at gas and renewable natural gas, which are chemically identical, you should say that if society is going to use any natural gas, it should use RNG first and then use fossil natural gas second from a purely environmental standpoint,” Light said. “I personally also think that on a global scale, there’s going to be immense natural gas demand, including fossil natural gas, through at least the rest of our lifetimes.”



**TC Energy currently has 11 facilities in operation across the country, with eight under development.**

**Role in the energy mix**

With energy insecurity playing a large role in the decision-making processes within the energy industry, RNG was considered as a means to reduce pressure on the U.S. energy supply. However, since RNG currently comprises such a small percentage of the U.S. energy mix, it isn't predicted to help much in that regard.

That being said, as a net negative solution, it is one of the most efficient ways for energy companies to reduce emissions output.

According to Williams' predictions, RNG will only account for 2% of the American energy mix due to the high cost to produce the gas. However, he maintained that it was worth producing because of its copious positive environmental impacts.

"I personally like it as a commodity because ... it is capturing something that is a net negative, no matter what," Williams said. "It's as a result of an ongoing business via dairy farming or chicken farms or whatever, the source or wastewater or all the different RNG sources—all that gas is just going to atmosphere. I'm always a big fan of efficiencies and capturing things that are harmful to the environment before they get there."

Light was more optimistic on the outlook of RNG's role in the energy mix. From a decarbonization standpoint, Light believes that RNG is "the most economic and reliable way" for companies focused on environmentally friendly energy solutions. Additionally, from an energy security standpoint, she believes it will play an important, albeit small, role in the global energy mix.

"I think we've seen over the past few months, with [critical] geopolitical events, that an energy shortage anywhere becomes a global energy shortage, and adding RNG production in the U.S. just adds to global energy security," she added.

While RNG distribution and usage is already expanding at a rapid rate, Light anticipates further growth, both in the U.S. and globally.

"There's so much opportunity in the U.S.—that's where our focus is now—but especially in large urban areas, population dense areas, there's a lot of landfill potential internationally that could [be used] to produce RNG," she said. "Compared to traditional natural gas resources, it's a very small piece of the pie, but I think that there is a lot of potential in the coming decades for this to play a role across the globe." 

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# BUILDING BLUE TO GREEN HYDROGEN

As the hydrogen color debate continues, companies are becoming color agnostic with focus on carbon intensity, economics and demand.

ARTICLE BY  
**VELDA ADDISON**  
SENIOR EDITOR

**T**he world is counting on blue hydrogen to help decarbonize sectors that rely heavily on fossil fuels, especially in instances in which electrification is not a viable option. Think aviation, shipping and industrial processes.

The technology is proven. It's cheaper to produce compared to some alternatives—for now.

Many believe that blue hydrogen—produced from natural gas or methane, via steam methane reforming (SMR), coupled with carbon capture and storage (CCS)—can move the world closer to emission reduction goals on the road to net zero. This is in spite of objections from critics who say it is not as clean as green hydrogen, created from water via the electrolysis process that uses electricity generated from renewable resources, along with concern about losing its cost edge and fugitive emissions.

Still, blue hydrogen supporters say the low-carbon resource is worth pursuing. Using existing infrastructure and technology could help accelerate development of the resource.

"To spur the hydrogen economy, we must be open to exploring natural gas and hydrogen blended infrastructure," Baker Hughes CEO Lorenzo Simonelli said during an energy transition conference in June. "Without the right infrastructure, we will not achieve a hydrogen economy. Today, we have technology ready to deploy with little to no major upgrade of current turbomachinery equipment, which will help enable the hydrogen economy."

Hopes are high on hydrogen's ability to decarbonize major sectors of the economy and generate electricity. However, the promise of a burgeoning hydrogen economy could go unfulfilled without greater demand.

## Making moves

Companies, including those known for their oilfield services and natural gas production, have already jumped into action working together and independently.

Baker Hughes, for example, is tapping natural gas

to provide hydrogen-ready, turbo-compression pipeline technology in Greece. It is supplying gas turbines and compressors capable of running on a blend of natural gas and hydrogen.

In the U.S., the energy services company is providing advanced hydrogen compression and gas turbine technology for global projects underway by Air Products, which is also developing a \$4.5 billion blue hydrogen complex in Louisiana. Developers say the proposed project will capture and sequester 95% of the process facility's CO<sub>2</sub> emissions, permanently sequestering over 5 million tons (MMton) per year of CO<sub>2</sub> in Louisiana.

The project is one of several blue hydrogen initiatives underway in the U.S. as the nation works to reduce emissions and advance major clean hydrogen initiatives. This includes awarding \$8 billion for regional clean hydrogen hubs to establish regional networks of hydrogen producers, consumers and infrastructure to speed adoption of hydrogen.

Indications from proposals submitted to the Department of Energy's \$8 billion H2Hubs program show developers don't overwhelmingly favor one feedstock over another. Targeted feedstocks include fossil fuels with CCS, renewables and nuclear.

While each comes with its own set of advantages and disadvantages, success may come down to carbon intensity and economics.

The most common form of hydrogen produced today is gray, which like blue hydrogen is produced from natural gas or methane, but with no carbon capture involved.

Only 1% of hydrogen is produced as blue hydrogen globally, according to DNV.

However, the potential is great, particularly in the U.S. where there's an abundance of natural gas. A 2020 resources assessment by National Renewable Energy Laboratory shows about 167 scf of natural gas would be needed to produce 1 kg of hydrogen via SMR with a production efficiency of 73%. About 1.7 Tcf of natural gas would be needed to produce 10 MMton of hydrogen.

**Amount To Produce 1 Kg Of Hydrogen By Resource**

Resource	Conversion Pathway	Amount to Produce 1 kg Hydrogen		Production Efficiency (E <sub>out</sub> /E <sub>in</sub> , LHV)
Natural gas	Steam methane reforming	167 scf	165 MJ	73.0%
Coal (bituminous)	Coal gasification	8.6 kg	225 MJ	53.3%
Nuclear (uranium)	High-temperature electrolysis	4.62×10 <sup>-5</sup> kg U	240 MJ	50.2%
Biomass	Biomass gasification	13.0 kg bone dry biomass	242 MJ	48.3%
Biomethane	Steam methane reforming	3.29 kg methane	165 MJ	73.0%
Wind power Solar power Water power Geothermal	Low-temperature electrolysis	51.3 kWh	185 MJ	64.9%

Source: NREL

**Facing challenges**

According to the Center for Strategic and International Studies (CSIS), producing hydrogen from fossil fuel feedstocks—such as natural gas or methane—with emissions intensity at or below 2 kg of CO<sub>2</sub> equivalent at the production facility is possible with processes such as SMR or auto-thermal reforming. Hydrogen is considered clean, according to the Infrastructure Investment and Jobs Act, at this carbon intensity level.

“However, capturing the carbon dioxide at high efficacy and at reasonable cost will require innovation,” CSIS said in its July 29 hydrogen hubs report. “A key challenge for fossil fuel hydrogen will be the emissions associated with natural gas production and distribution. Even at high capture rates, CCS might not be effective for producing clean hydrogen after taking into account fugitive methane emissions, other upstream emissions, and carbon emissions outside of the CCS process stream, particularly under the least favorable assumptions for methane-leak rates and high global warming potential.”

High gas prices are also among factors.

Henry Hub front-month futures were trading at \$7.84/MMBtu on Aug. 1, up 100% from a year earlier.

Rising gas prices come as demand increases due to heat waves, surging LNG exports and shifts away from coal-fired electric generation in parts of the world. Europe’s unprecedented energy crisis, as Russia squeezes flows of natural gas to the region following its invasion of Ukraine, is another factor.

Fears of near-term natural gas shortfalls also have emerged in other regions, including in Australia where the Australian Competition & Consumer Commission said Aug. 1 its LNG exporters must divert natural gas to domestic markets to avoid a potential 56 petajoules shortfall in 2023.

The short-term volatility comes as renewable costs fall.

Research shared in June by DNV indicates green hydrogen will reach cost parity with blue hydrogen within the next decade, becoming the cheapest form of production in most regions by 2050. By this time, grid-based electrolysis costs would have fallen to average about US\$1.50/kg, if forecasts hold true.

**‘Part of the equation’**

Backers of blue hydrogen say it shouldn’t be counted out.

DNV also forecasts blue hydrogen costs will drop from US\$2.5/kg in 2030 to US\$2.2/kg in 2050. Costs are already US\$2/kg in regions, such as the U.S., with access to cheap gas, it said.

“We absolutely think that blue hydrogen has to be part of the equation because there just isn’t enough renewable [energy] to make all the hydrogen out there,” Michelle Noack, global climate transition director for Dow, said during a June energy transition conference in New York. “There just isn’t from a practical standpoint.”

Today, nearly all of the world’s 90,000 ton per year of hydrogen produced is gray, but blue hydrogen, some believe, will have a bigger role in the shorter term.

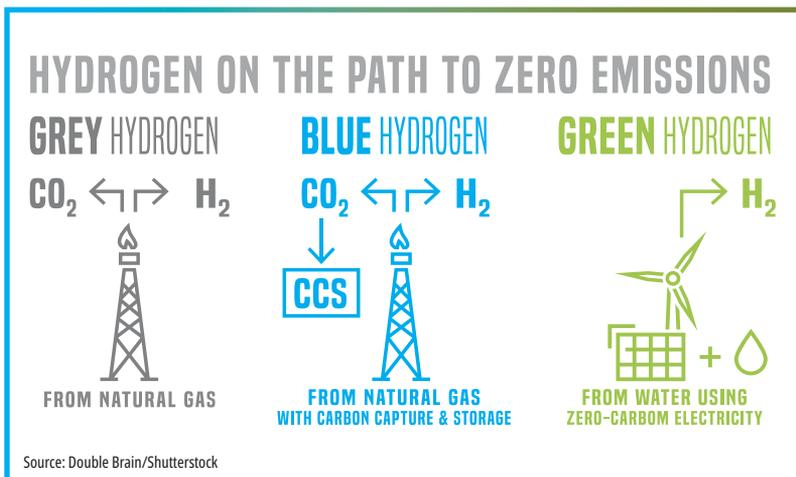
Investments in blue hydrogen continue today as green hydrogen costs fall.

“I’m not worried about the investments that we’re making,” Noack said of Dow’s blue hydrogen investments in Europe and Canada, where it will convert cracker off-gas into hydrogen as a clean fuel to be used in the production of polyethylene and ethylene derivatives at its Fort Saskatchewan, Alberta, site.

“We’re not going wholesale and fixing every single cracker that we have right off the bat. We recognize that technologies are going to change. And frankly, hydrogen probably isn’t going to be

**“We absolutely think that blue hydrogen has to be part of the equation because there just isn’t enough renewable [energy] to make all the hydrogen out there.”**

—Michelle Noack, Dow



the only way we go. ... We're expecting to have electrified crackers," adding the company is working on the technology.

Hydrogen is one of four key verticals for Chevron Corp., which plans to spend about \$2.5 billion in low-carbon hydrogen, according to media reports.

"There's going to be a lot of hydrogen opportunities. We're color agnostic in general," Chris Powers, vice president of CCUS for Chevron New Energies, told Hart Energy. "Blue hydrogen makes a lot of sense in a lot of jurisdictions coupled with CCS. You can take a relatively lower priced hydrocarbon feedstock, capture the CO<sub>2</sub>, and then you've got a nice low carbon intensity hydrogen stream. In other areas, especially as you look several years down the road as cost comes down, green hydrogen is going to make a lot of sense in areas where you've got abundant renewables."

Developing a hydrogen market is less about defining and debating hydrogen colors, experts say.

"It's more about what it takes to grow," added Vimal Kapur, the former president and CEO of Honeywell Performance Materials and Technologies, who was recently promoted to Honeywell president and COO. The company has technology for blue and green hydrogen, including a catalyst-coated membrane technology released this year for green hydrogen production.

Speaking at the June conference, Kapur added there are some limitations on technology, utilization and policy. "I think [hydrogen] can be scaled rather quickly if we get into the mindset of [discussing] what's missing versus trying to define the colors and keep debating [whether] this color is better."

### Addressing scale, demand

Regardless of the potential role hydrogen can play in the energy transition, the position of natural gas or which hydrogen production method dominates, demand and scale are key.

"There are multiple pieces of the value chain to put together. You've got to have pore space to put the CO<sub>2</sub>. You've got to have a source of fuel, good supply, relatively low cost. For instance, gas coming from the Permian or Appalachia," Powers said. "You've got to have an offtaker in a market

to go to. It's really about lining those three bits up; that'll underpin FID [final investment decision] on a big project at scale. We as well as others are doing a lot of work to move some of those projects forward."

Today hydrogen is used mainly in oil refining, fertilizer and industrial processes.

Policy support and incentives will be needed to spur more demand for hydrogen, which remains too

expensive for widespread use today, according to DNV. That is starting to happen, including in North America, where Canada and the U.S. have unveiled hydrogen strategies with focus on production hubs and funding.

"The 2040s will be the decade of demand diversification as more hard-to-abate sectors will be forced to use hydrogen or its derivatives to decarbonize," DNV said in its hydrogen report. "Although the cost of hydrogen will continue to fall and approach the US\$1/kg to \$2/kg, uptake will mostly still be driven by the increased cost of the alternative because of carbon pricing, or by decarbonization mandates."

To meet targets set in the Paris Agreement, hydrogen would need to meet about 15% of global energy demand by mid-century, according to DNV. It foresees slow uptake of hydrogen globally though, reaching 0.5% of the world's energy mix in 2030 and 5% in 2050. In some regions, however, hydrogen's share in the energy mix could be double these percentages.

"Much stronger policies are needed to scale beyond the present forecast, in the form of stronger mandates, demand-side measures giving confidence in offtake to producers and higher carbon prices," the report said.

Bruce Niemeyer, vice president of strategic planning for Chevron, explained how the company is putting the pieces together with collaboration. It has partnered with Caterpillar Inc. to develop hydrogen demonstration projects in transportation and stationary power applications. The two are working with BNSF Railway Co. to confirm the feasibility and performance of hydrogen fuel for line-haul rail.

"We produce a lot of hydrogen every day in our current refining operations. ... Caterpillar can build the engine that burns it, and BNSF has a use case to put it in a locomotive and create a hydrogen railway," Niemeyer said. "It takes all of those pieces to come together. And the reason we are involved in this is we see an opportunity to lead, to bring those pieces together, because that's ultimately all that's required in order to turn hydrogen from a concept into reality." 

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# Energy ESG 2.0: The Evolution of a Megatrend

The concept of ESG in the energy sector continues to evolve amid increasing backlash as discussion around energy security takes center stage.

ARTICLE BY  
FAIZA RIZVI

The practice of ESG investing dates back to the 1960s when it was termed “socially responsible investing.” Over the years, transformation of topics such as climate change and social inequity have changed the business environment, driving the evolution of ESG risks and opportunities for organizations.

For the energy sector, which is increasingly under the spotlight of climate change activists, the concept of ESG has evolved from “nice to have” to “must have.” Boards of directors, shareholders and regulators demand to make ESG considerations central to business operations. But now, as the oil and gas companies face the dual challenge of addressing energy shortage and a compelling climate agenda, the discussion around ESG has taken a new turn.

While energy companies have taken meaningful steps toward achieving ESG goals, increasing concerns of energy security have given rise to ESG backlash in recent months, with many complaining of burdensome reporting, compliance costs and growing regulatory scrutiny of corporate or investment fund “greenwashing.”

So, what’s next for the three-letter megatrend?

“ESG will continue to evolve as shareholder and other stakeholder priorities change and as pressure from government agencies and activist shareholders continues to mount,” Travis Wofford, partner at Baker Botts, told Hart Energy.

ESG has already succeeded in acquiring the mindshare of boards of directors and management teams at many institutional investors and large public companies, Wofford noted, adding that the U.S. Securities and Exchange Commission’s (SEC) new disclosure rules will give rise to more ESG activism.

“New SEC disclosure rules will increase transparency and scrutiny of business operations and governance and will lower the cost of ESG activists to seek board representation instead of just making

**“ESG will continue to evolve as shareholder and other stakeholder priorities change and as pressure from government agencies and activist shareholders continues to mount.”**

—Travis Wofford, Baker Botts



Scan to watch an exclusive interview with Travis Wofford.





shareholder proposals," Wofford said, adding that ESG activism will continue to "flourish and be well-funded."

### 'Stronger than ever'

While many U.S. oil and gas companies have stated that ESG has taken a backseat amid energy security concerns, Appalachian-focused operator Diversified Energy Co. Plc's ESG commitment is "stronger than ever," according to company CEO Rusty Hutson, Jr.



**"We have a zero-tolerance policy for unintended emissions and this year, we're investing additional capital to prove it."**

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

"Our company was resilient through the pandemic and like so many sectors of the economy, the energy industry is facing supply chain and worker shortages, higher costs to operate and an administration that says it wants to encourage increased production while continuing to pursue policies that have the opposite effect," Hutson said.

"But that doesn't mean that our commitment to ESG has fallen to the wayside. In fact, it's stronger than ever at Diversified, and I think that's probably the case industrywide," he added.

Over the past four years, Diversified Energy has purchased about 69,000 used wells, beating Exxon Mobil Corp. to become the largest well owner in the country. Despite the calls to produce more, Hutson noted that his company is incorporating ESG into its business model with heavy investments in emissions management.

"We have a zero-tolerance policy for

unintended emissions and this year, we're investing additional capital to prove it," Hutson said.

Diversified is spending \$15 million over its budget on emission reductions initiatives, including aerial detection, increased asset retirement initiatives, and equipment conversions and replacements.

Hutson noted how his company's approach of acquiring noncore producing wells, investing in their production and retiring them "responsibly" checks all the ESG boxes.

"Our approach to acquire noncore—often ignored—producing assets, invest in those assets to modernize them, improve production and enhance environmental performance and then responsibly retire those assets at life's end touches all key aspects of E, S and G," Hutson explained.

"Environmentally, we're producing more energy from a smaller footprint and with fewer emissions. Socially, we're taking assets, improving production,



**“Oil and gas companies are finding themselves on the brink of ‘ESG 2.0’ where the line between purpose and profit is dissolving and companies look to identify the best ESG strategies to promote value creation.”**

—Nicole Robertson, *Nokia*

which means more revenue and royalties, and investing in communities. Governance, we’re responsibly operating and retiring assets that, in some situations, may have otherwise become abandoned,” he added.

According to Hutson, ESG reporting, investing and sustainability-linked financing is “absolutely here to stay—and for good reason,” adding that ESG action makes “good business and environmental sense,” because it makes the business stronger and grants access to new pools of capital.

“One thing that the industry is making abundantly clear is that ESG is not a separate aspect of our operating processes but is embedded in how we do business, and that’s especially true for Diversified,” Hutson said.

### Understanding the ESG story

Specific to the energy sector, understanding the social purpose of energy companies, which enables virtually all aspects of modern life, is critical to understanding their ESG story, Baker Botts’ Wofford explained.

“The energy industry must better articulate its social value so that policymakers and institutional investors can facilitate and enhance that benefit to the public and not create artificial constraints on energy production and innovation,” Wofford noted.

For example, recent trends show that ESG-led shifts of capital investment away from hydrocarbons led to unintended social consequences. Under-capitalized energy companies result in reduced hydrocarbon supplies, which in the face of growing demand leads to higher prices, fuel shortages, inflation and other unintended consequences.

“This is why traditional energy is a necessary part of large institutional investors’ portfolios in the current economy,” he noted.

In energy, minimizing risk and negative externalities, whether environmental, safety, social or other factors, while increasing profitable operations to meet demand has been core to “best in class” business operations for decades.

“But recent ESG primacy has led to improved safety records, reduced environmental externalities and better governance practices, among other benefits, all while striving to meet the world’s energy needs,” Wofford said.

### ‘No green without digital’

Although ESG and technology have had a long re-

lationship, experts say the role of the latter in ESG is relatively underexplored and has an enormous potential in achieving ESG goals, especially as ESG reporting continues to evolve.

“Oil and gas companies are finding themselves on the brink of ‘ESG 2.0’ where the line between purpose and profit is dissolving and companies look to identify the best ESG strategies to promote value creation,” said Nicole Robertson, vice president for sustainability and ESG at Nokia.

“At Nokia, we believe that there is no green without digital, and this is particularly true in the oil and gas industry, where a focused commitment to implementing digital technology across the production stream is essential to reaching ESG goals,” she added.

According to Robertson, this is an “exciting time” in both the technology and the energy industry, with an unprecedented opportunity to collaborate to fulfill global energy needs, while embracing digital transformation occurring across the sector.

“The adoption of ESG and the role of technology within the energy industry is only beginning and must accelerate if companies are to satisfy shareholders, maintain a social license to operate, fulfill questions from the SEC and ensure access to capital markets,” she noted, adding that ESG should remain a “key focus” of every energy company C-suite and board, calling for more investment in new technologies.

“The industry must embrace the technology-enabled Fourth Industrial Revolution, not simply as a test case but considering ESG goals and how technology can promulgate them across the enterprise,” Robertson noted.

She added, “This is particularly true in managing the efficiency, safety and sustainability of own operations but also enhancing supply chain transparency and increasing circular practices and processes—particularly closing the loop on manufacturing supply chains and Scope 3 emissions.”

Additionally, she explained how a long-term commitment to ESG requires the workforce to sustain it, where technology plays a critical role.

“Access to digitally savvy employees will remain incredibly competitive. The industry must upskill existing talent with digital skills and build partnerships with companies like Nokia, who can provide both the solutions and the knowledge to fully enable ESG and digitalization goals,” Robertson said. 



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# The Future Of ESG Investing

In the shadow of energy security concerns, ESG investments continue to grow and diversify across the industry.

ARTICLE BY  
ANNA KACHKOVA  
CONTRIBUTOR

**E**SG metrics have become a major priority for the oil and gas industry. It is shaping how investments are being made, and this trend is expected to continue. At the same time, though, especially in the wake of the war with Ukraine, concerns over energy security are also in the spotlight, and the industry will need to strike a balance between meeting rising demand—against the backdrop of a transformation in global oil and gas trade flows—and maintaining its focus on decarbonization efforts and the energy transition.

There is also significantly more clarity needed on ESG and how ESG metrics are measured and reported. Efforts to standardize ESG reporting are underway and are expected to make it easier for investors to assess industry performance. While this is being worked out, there are already steps oil and gas companies can take to attract more investment in the era of ESG.

## Under pressure

ESG has affected the oil and gas industry's access to capital like never before. Other significant developments of recent years, including the COVID-19 pandemic and, most currently, the war in Ukraine



**“A number of surveys of institutional investors show that other than climate, social and governance factors rank as the top ESG concerns.”**

—Nneka Chike-Obi, *Sustainable Fitch*

have not changed this, though they have complicated the dynamics at play.

“ESG investment strategies have developed beyond the traditional negative screening, where certain activities or sectors are broadly excluded due to their environmental, social or governance characteristics,” Sustainable Fitch’s head of APAC ESG research, Nneka Chike-Obi, told Hart Energy. “Currently we see a larger number of asset managers choosing engagement as an ESG strategy—that is using annual meetings with portfolio companies to press them on their ESG performance and identify the

most important areas for improvement,” she continued.

According to Chike-Obi, although oil and gas companies are no doubt affected by this, the pressures are more likely to be focused on strategy and operations first, before those companies face a significant drop in investment capital.

However, accurately assessing a company's ESG performance remains a challenge, given that the push to standardize the metrics is still ongoing.

“There are some major challenges regarding identifying which exact stocks within upstream are better on ESG,” Rystad Energy's head of ESG analysis, Alisa Lukash, told Hart Energy. “Data standardization and reporting transparency are the major challenges for GHG [greenhouse gases], water management and spills reporting,” she continued. “But in general, it is expected that institutional investors will continue to focus on balancing the portfolios toward sustainable businesses. And the regulations will bridge the data challenge.”

There are various types of investors that have emerged, including ESG funds, providers of sustainability-linked bonds and loans, and institutional investors that require their portfolio companies to perform at a certain standard. Lukash noted, however, that there are also other investors that are not bound to follow specific ESG metrics and are “strongly supporting upcycle” in the U.S. shale industry. Thus, operators are not necessarily required to perform well on ESG in order to attract investment yet, but this increasingly appears to be changing.

### Leading the way

There are also regional variations in the evolution of ESG investment and reporting, with Europe leading the way, while the U.S. is seen by some as lagging.

“Europe has driven the initial demand, without regard for the cost of, or sustainability in, the pace of such investments,” Opportune partner in charge of complex financial reporting, Josh Sherman, told Hart Energy. “I believe there is a floor to ESG demand in that a portion of the investing public will always push for an end to fossil fuels, regardless of the consequences.” He noted that other investors, however, viewed too rapid of a transition from fossil fuels as a detriment to society, especially in developing countries.

“The world needs energy addition (all forms), not subtraction,” Sherman said. “E&P operators understand and have accepted the responsibility of reducing their carbon footprint.”

European ESG investment trends can have an impact beyond that region, though, including in the U.S.

“The EU's SFDR [Sustainable Finance Disclosure Regulation] and the EBA's [European Banking



## “Data standardization and reporting transparency are the major challenges for GHG, water management and spills reporting.”

—Alisa Lukash, Rystad Energy

Authority] green asset ratio pilot program mean that financial institutions in Europe have more pressure to increase the volume of green investments and the quality of reporting and disclosures on investment products,” said Chike-Obi. “Given the global nature of the largest institutional investors, this is likely to have an impact beyond the EU's borders.”

The additional pressure in Europe to step up green investments has translated into some of the largest European-based oil and gas companies adopting more ambitious decarbonization goals over the past few years.

“This pressure from investors is certainly a factor in why European majors have been the first movers in terms of setting net-zero targets for their Scope 1 and 2 emissions,” Sustainable Fitch associate director William Attwell told Hart Energy. “Several have also gone beyond their U.S. counterparts in also setting targets for Scope 3 emissions, which includes ‘use of sold products,’ and accounts for the largest share of oil and gas companies’ carbon footprints, although methodological challenges persist,” he said.

Pressure on U.S.-based companies to also adopt Scope 3 targets is expected to grow, however, despite the challenges relating to establishing clear methodologies for measuring these emissions. Indeed, the U.S. Securities and Exchange Commission (SEC) is proposing that publicly listed companies disclose their Scope 3 emissions in cases where they are considered “material” or if the company in question has already set a decarbonization target that includes Scope 3. A final rule is expected to be introduced in December, but the proposal has received pushback from those concerned about how workable it would be.

“Many U.S. operators do think that it is impossible to report Scope 3 as suggested by the SEC as it is extremely difficult to have the same methodology of [calculation] across the industry, so the methodology framework should be set in place first,” said Lukash. She also sees differences in how European and U.S. super majors are approaching their energy transition targets.

"One strong trend is that in Europe super majors are targeting diversification (into renewables, hydrogen etc.) and decarbonization as energy transition strategy while in the U.S., it's predominantly decarbonization," she said.

### Social and governance

While the environmental aspect of ESG targets has overwhelmingly come to dominate discussions around ESG, the social and governance elements should not be discounted. For E&P companies that view sustainability as a whole as a core value, the social and governance elements become particularly important, and it is possible that they will be viewed more favorably by investors as a result.

"Environmental concerns will continue to take center stage because it's getting the most media attention," said Sherman. "Ultimately, ESG is about sustainability in total, not just the environment. Sustainability is the combined efficient and economic development of natural resources (environment), advancement of employees and investors (social) and protection of a company's business model and underlying economics (governance)."

Sherman noted that Laredo Petroleum Inc. and Encino Energy, among numerous other E&P firms, reference sustainability as a core value on their websites.

"They're thinking more broadly than just the environmental aspects and, as a result, are returning capital to their investors," he said.

Rystad and Sustainable Fitch both also see investors taking an interest in ESG metrics beyond the environmental.

"Governance is actually the most important aspect of ESG as it actually sets sustainability and social impact targets, which are linked to compensations for board and management, so that drives the overall sustainability strategy," said Lukash. She added that she believed social investments and safety/diversity were also "extremely important" and frequently asked about by investors.

Chike-Obi, for her part, sees the top ESG concerns as spread across the three elements.

"A number of surveys of institutional investors show that other than climate, social and governance factors rank as the top ESG concerns," she said. "These include gender and diversity, worker health and safety and board independence. In a recent set of analytical reports, Fitch has found that a number of social issues are credit-relevant for companies in the extractive sector, for example."

### Global shake-up

The evolution of ESG investing continues to play out despite the impact of Russia's war in Ukraine, which shook up energy markets and trade routes,



**"I believe there is a floor to ESG demand in that a portion of the investing public will always push for an end to fossil fuels, regardless of the consequences."**

—Josh Sherman, *Opportune LLP*

pushed commodity prices to multiyear highs and brought the question of energy security sharply into focus. But while the war has improved the prospects for oil and gas in the short-term as Europe scrambles to replace Russian energy imports, it does not appear to have affected long-term decarbonization targets. Indeed, it even makes development of domestic renewables and cleaner sources of energy more attractive to countries seeking to bolster their energy security.

"The war in Ukraine has reminded the world about the importance of energy security," said Sherman. "The expansion of renewable energy sources is great, but the world remains dependent on reliable, affordable and accessible fossil fuels. Again, sustainability is more than the environment and we need all forms of energy. Investors will come back to responsibly sourced oil and gas producers with the discipline to grow their asset base while distributing free cash flow."

In the short term, oil and gas companies, especially those that have not yet diversified away from their upstream operations, are benefiting from higher commodity prices and an increased appetite for fossil fuels.

"Many fear underinvestment in oil and gas. This gives strength to some of the operators who initially didn't choose to diversify out of upstream," said Lukash, citing Exxon Mobil Corp. as an example. Against the backdrop of the war in Ukraine, she currently sees a less negative response from investors and media to increased upstream investments.

Recent quarterly results also illustrate how oil and gas companies are benefiting from current price trends and geopolitical developments.

"The supply-side tightening that has accompanied the war in Ukraine has been a key driver supporting the elevated profitability of oil and gas companies, with several majors reporting record profits in recent months," said Attwell. "Although demand-side pressures may soften on the back of weak economic growth and recession fears on some markets, supply

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challenges should keep prices at historically high levels.”

However, Attwell also sees potential for an acceleration of the energy transition on both sides of the Atlantic over the long term thanks to the war.

“The war has also focused attention on energy security, which could accelerate the transition to renewables, as demonstrated in the European Commission’s REPowerEU plan, which proposes increasing the renewables target from 40% to 45% of the EU’s energy consumption by 2030,” he said.

This is playing out at the country level too, with Attwell noting that Germany had also approved a proposal to raise its country-level renewables target.

“This, alongside progress on the draft climate bill in the U.S., could further incentivize and bolster interest in clean energy projects by ESG-focused investors in the coming years,” he said.

### Next steps

It will take some time yet for ESG reporting to become more standardized, especially given some of the challenges involved in measuring Scope 3 emissions, for example. In the meantime, there are steps oil and gas companies can take to make themselves more attractive to ESG-focused investors.

“Some companies have spun off fossil fuel divisions as separate entities to attract investment into the less carbon-intensive areas of the business and allow the fossil fuel standalone to then raise capital at whatever cost the market sets for them,” said Chike-Obi. “They can also improve the non-emissions parts of their business. In most ESG ratings, such as Sustainable Fitch’s, environmental impact and policies are only a portion of the overall assessment,” she added.

Chike-Obi noted that oil and gas as a sector has high exposure to certain social risks, such as indigenous and community rights in proximity to pipelines.

“These are areas that companies can show progress in even if their core activities are highly emitting,” she said.

Attwell, meanwhile, anticipates that certain types of targets, including for emissions and interim targets on the path to net zero, could increasingly find themselves in the spotlight.

“ESG-focused asset managers and owners face rising scrutiny as the market becomes more sophisticated, and more jurisdictions roll out and enhance their disclosure requirements for sustainable investments,” he said. “They are therefore likely to value further detail and clarity on oil and gas companies’ progress on meeting their Scope 1 and 2 emissions reduction targets, particularly given how several majors have set interim targets,” he added. In most cases, these interim targets are for 2025 or 2030.

“Increasing attention is also likely to be paid to companies’ Scope 3 emissions, notably how they are defined and calculated, and to the credibility of companies’ transition plans,” Attwell said.

Rystad’s Lukash identified a variety of different actions oil and gas companies could take to continue attracting investment, starting with having a detailed sustainability strategy and energy transition plan that secures long-term cash flows. On top of this, Lukash views higher transparency on ESG reporting and initiatives to help standardize reporting as factors that can be viewed favorably by investors. In terms of decarbonization measures, she suggested steps such as investing in carbon capture and storage and clean forms of hydrogen as well as electrifying operations in order to lower emissions.

Finally, she suggested that oil and gas companies cooperate with third-party data providers to help identify areas of weakness and ways to improve their ESG rankings.

For Sherman, a focus on returns takes priority. “It starts with oil and gas companies returning capital to their investors,” he said. “Returns are happening through improved governance by management teams, their boards and capital providers. The luster of other industries will fade as the broader market pulls back into a likely recession. It may be a longer cycle, but investors will return to E&Ps and midstream if the industry remains disciplined,” he added.

**“Increasing attention is also likely to be paid to companies’ Scope 3 emissions, notably how they are defined and calculated, and to the credibility of companies’ transition plans.”**

—William Attwell, *Sustainable Fitch*

Sherman believes that this is the very early stage of a longer cycle of ESG investing.

“Like many cycles, there are ups and downs. I believe we’re at the peak of a current cycle, where only a handful of ESG investments (as a percentage of total such investments) are economic without government subsidies. Many ESG investments may languish until broader demand expands or consolidation occurs,” he said. And he does expect this to play out over time.

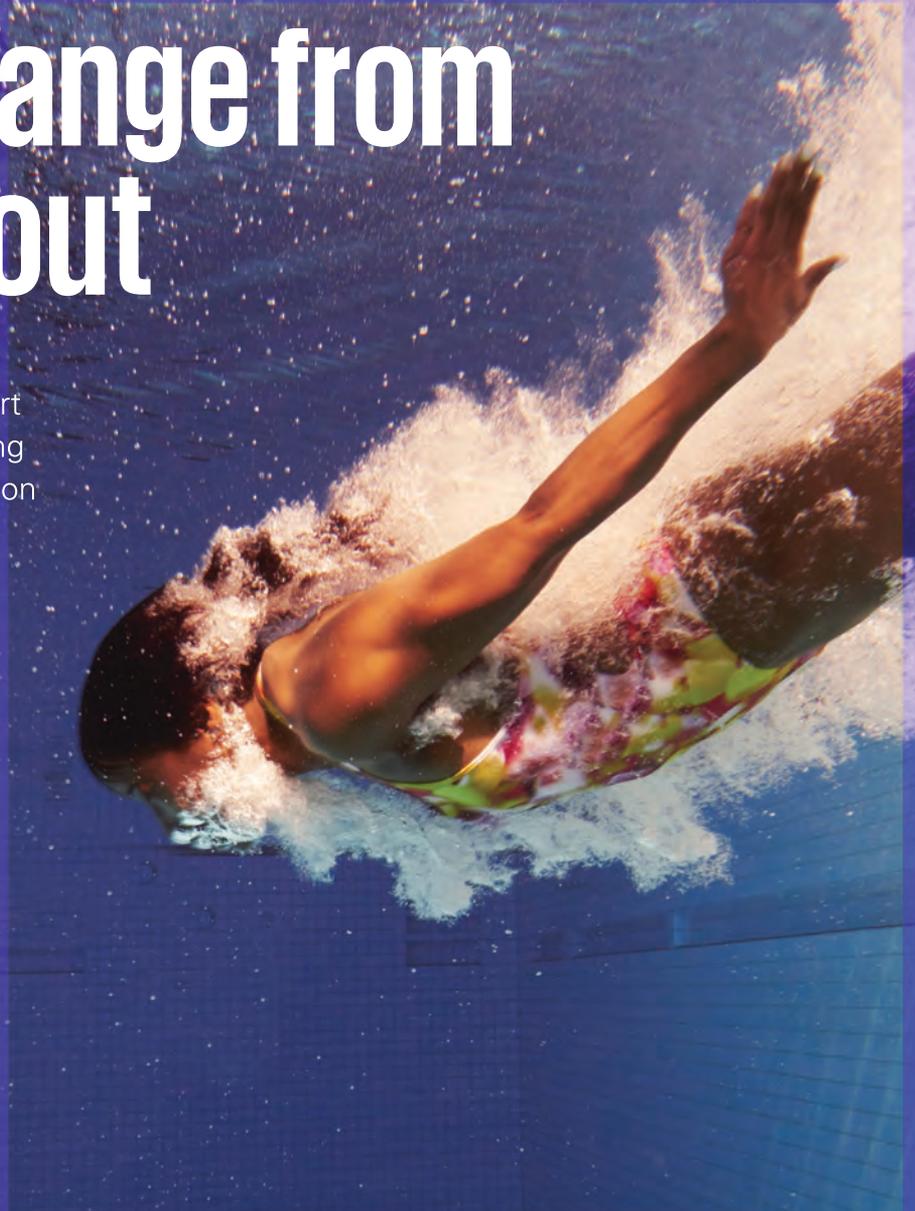
“ESG investments will continue to grow across every sector of the energy industry and are helping usher in a very exciting evolution of responsibly sourced fossil fuel development and emissions management,” Sherman said. 



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# Battling Climate Change Alongside Inflation

While establishing energy security is currently the main priority of oil and gas companies, they haven't forgotten the importance of allocating attention and funds to combat climate change.



ARTICLE BY  
**MADISON RATCLIFF**  
ASSOCIATE EDITOR

Recent geopolitical and economic issues throughout the world have forced oil and gas corporations to step back and examine their companies and the amount of attention they give to each aspect of their operations, from traditional production output to how much capital they invest toward ESG initiatives.

In Europe, Russia is threatening retaliation for EU-imposed sanctions that will limit the amount of energy products imported from the country, leaving many worried about energy shortages come winter and wondering how the U.S. will be affected.

Inflation is also on the rise in the U.S., with the Bureau of Labor Statistics reporting the consumer price index increasing 9.1% in June—the largest price hike since 1981—leading to higher oil prices as well as higher gasoline prices.

Taking these concerns into account, the first and foremost priority of global governments right now in regards to energy is securing affordable and reliable energy, as opposed to battling the industry's effect on climate change, Nick Volkmer, president of ESG and renewables at Enverus, told Hart Energy.

"In the realm of 90% of global GDP has some sort of net-zero target, and a lot of these are fairly high level," he said. "But it means it's a component in the decision process, and I think, on the opposite side of the same coin, what's being solidified over the last few months here is that the No. 1 priority of any government is going to be energy security, and the secondary priority is going to be energy sustainability."

However, the oil and gas industry has not found itself in an either-or situation. Though it will take adjustments, operators don't have to choose between increasing traditional oil and gas

production to combat inflation and ESG-focused sustainable operations to combat climate change.

According to analysts from consultancies Enverus and Rystad Energy, battling climate change is still an important goal, and there are ways to do so while strengthening traditional energy output.

## Investment criteria

Investors in the oil and gas space have been vocal about their ESG-related criteria for delegating funds in the past few years, but in light of socio-economic and geopolitical issues—skyrocketing inflation, Russia's invasion of Ukraine, energy insecurity—that might not be as big of an issue for companies in need of capital.



**“... What’s being solidified over the last few months here is that the No. 1 priority of any government is going to be energy security, and the secondary priority is going to be energy sustainability.”**

—Nick Volkmer, *Enverus*

In a report Rystad Energy conducted in June 2022 on how E&P sustainability strategies affected market performance, the study showed that the companies who ranked the lowest in ESG ranked higher in the market in the short term, but companies ranking higher in ESG performed better in the long term.

"Overall, it is fair to say that ESG performance does impact investor appetite, even though during the latest market recovery of 2021, ESG scores haven't been the lead indicator of stock growth," the report stated. "As such, ESG performance affects the ownership profile of the energy sector with sustainability focused investors diversifying into the other sectors."

According to Alisa Lukash, vice president of shale research at Rystad Energy, investors are more supportive of companies with lower ESG scores, not because they don't value ESG, but because companies with lower scores are usually the ones who are in need of more financial backing.

"Short-term ESG performance is actually not as important as the other fundamental aspects of the value for the companies, but looking long-term five years or so, then we'll see this fact that stronger financial aid companies still have stronger energy performance," she told Hart Energy.



**“Short-term ESG performance is actually not as important as the other fundamental aspects of the value for the companies ...”**

—Alisa Lukash, Rystad Energy

Additionally, investors have changed the way they invest in different energy companies and how they choose to allocate funds because of new government policies. Enverus' Volkmer explained how European governmental bodies have reclassified nuclear and natural gas investments as more environmentally friendly, qualifying them for different subsidies.

"That helps incentivize some different domestic industries, a good example being the LNG industry in the U.S.," he continued. "All of these things are interconnected, and at its heart, it's about trying to follow that carbon path to ultimately provide the most energy for the world in a relatively sustainable way."

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### What can be done?

While establishing energy security remains the primary focus for oil and gas companies for the foreseeable future, the progress they've made toward sustainable operations isn't simply going away.

According to Volkmer, the top three things E&Ps can focus on to fight climate change are eliminating flaring, getting better at monitoring and managing methane leaks and reducing combustion emissions where possible.

Reducing or removing the byproducts of hydrocarbon production are things that a majority of environmentally conscious operators were already doing anyway, so remaining vigilant in these practices can serve as an easy win.

"The environmentally conscious operators that we see are leaders in those three categories and are continuing to make strides to drive those down to zero because in the end, a lot of those aspects are just byproducts from developing the hydrocarbons, and they don't really necessarily provide a true net benefit to oil and gas companies or to the public," Volkmer continued.

Lukash echoed Volkmer's concerns about flaring, adding, "The easiest thing to do is, of course, to think a little bit about how to structure and what type of activity schedule to create to avoid those bottlenecks, what type of contracts to get with the pipelines, etc."

In addition to reducing flaring, Lukash recommended operators avoid traditional frac fleets to the best of their ability, instead suggesting electric frac fleets and other ways to electrify their operations as a short-term solution to reducing emissions.

In terms of long-term solutions, she noted that investing in water management infrastructure would be a beneficial means of boosting ESG scores, although it was the kind of solution that would require more funds.

"Water management is a bit more time consuming as operators would really have to invest in better infrastructure and thinking about the ways to reduce the fresh water use in the region," she said. "And it's very different in different states across the U.S., but there are ways, of course, to share the infrastructure with some of the nearby operators as well."

Overall, though, Lukash insisted that most midsize or smaller E&Ps focused on ESG would benefit from having "better planning in terms of output" to secure the environmentally friendly initiatives they want to implement.

"That is kind of more linked to the strategy and planning and understanding the landscape where they're operating, and of course, that would require more of an investment into the infrastructure overall and figuring out the ways to further reduce emissions and residual flaring, etc.," she said. 

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# SEC Proposed Disclosure Rules An ESG Opportunity

PwC's Reid Morrison advises producers on how to prepare for the new ESG reporting requirements.

ARTICLE BY  
**JENNIFER MARTINEZ,**  
ASSOCIATE EDITOR

In March, the U.S. Securities and Exchange Commission (SEC) proposed new rules that would require registrants to include certain climate-related and ESG disclosures in their SEC statements and reports. According to the SEC, the proposed disclosed information would include, in addition to other things, information regarding registrant's direct greenhouse-gas (GHG) emissions (Scope 1) and indirect emissions from purchased electricity or other forms of energy (Scope 2). Additionally, a registrant would be required to disclose GHG emissions from upstream and downstream activities in its value chain (Scope 3), if material or if the registrant has set a GHG emissions target or goal that includes Scope 3 emissions.

"Investors are looking to companies to explain the meaning, relevance and effect of ESG issues on their business," said Reid Morrison, a principal with PwC. "In a fall 2021 PwC global survey of investors, only 19% believed current reporting of this information is of good quality. We believe

standardized climate disclosures would aid investors in better understanding the impact of climate on a company's operations and financial performance and support comparability."

The rule changes are a step toward standardizing that reporting.

"There is a long history of voluntary frameworks," Morrison said. "The recent activity focuses on potential required disclosures."

These potential standards are in the proposal stage, he explained. "The SEC has received over 14,000 comment letters, including almost 1,000 letters from investors, registrants, industry organizations, public policy groups and the like," he said. "The feedback loop is likely to result in changes to the proposals before final rules are issued."

## Investor needs

The recent push for increased ESG efforts in the industry have been market-driven.



**“Regardless of the final form of the rules, companies need to start preparing for more disclosure now as investors and other stakeholders continue to ask for more transparent disclosure in this area.”**

—Reid Morrison, PwC

“I think everyone is responding to the needs of investors,” Morrison said. “Investors believe ESG disclosures are decision-useful but in multiple surveys have commented that the information being provided on a voluntary basis may not be in sufficient detail or may not be consistent company to company.”

Whether or not the newly proposed rules will help to standardize the information provided to investors is yet to be seen. Regardless, those investors recognize the value of standardization, and the global debate has turned its spotlight on organizations’ ESG policies and disclosures, Morrison explained.

“There are growing calls from investors, regulators and other stakeholders for better information on how businesses are considering these issues, particularly climate change,” he said. “So, ESG issues are playing a more prominent role in how companies are valued.”

The proposed climate-related disclosures do not exclusively affect the oil and gas industry;

they could potentially affect all industries impacted by climate-related risks.

“We advise companies not to view the SEC’s proposal as a compliance exercise,” Morrison said. “This is a great opportunity for companies to challenge themselves. These disclosures provide an opportunity to share their unique story and point of view on climate-related matters, including how prominently these topics play in their overall business, strategy, risk management and governance practices.”

The proposed disclosure rules give producers a chance to control their ESG story, Morrison said.

“I think it’s a win-win if companies approach their disclosures this way,” he continued. “Companies can better control their own narrative, and investors will get the more fulsome information they’ve been asking for.”

**Start the prepping**

As of July, the SEC is still considering public input on the proposal. Once that is completed, the SEC will adopt a final rule before any new disclosures would be required, Morrison said.

“Regardless of the final form of the rules, companies need to start preparing for more disclosure now as investors and other stakeholders continue to ask for more transparent disclosure in this area,” he added.

Morrison provided advice for how companies can start preparing for disclosures before they go into effect.

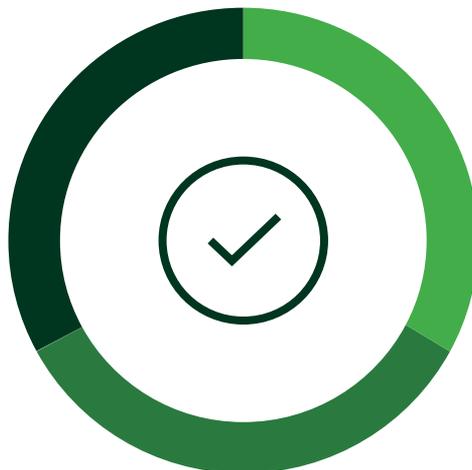
“We recommend starting with a gap analysis—understand what is in the proposal, what information the company may already be collecting or disclosing and the timing of those activities,” Morrison said. “Companies can then begin to understand where they have the most work to do and think about what controls and processes would need to be implemented to close any gaps.”

Regardless of what final form the SEC proposal takes and how it affects regulations and reporting, preparing standardized reporting ahead of time will provide producers and investors with a valuable toolset.

“Given strong investor interest in ESG information,” Morrison said, “efforts to understand and start to operationalize potential disclosures will not be wasted.”

**PwC Global Investor Survey: Quality Of ESG Reporting**

- Good 33%
- Neutral 33%
- Poor 34%



SOURCE: PWC'S 2021 GLOBAL INVESTOR SURVEY

*In a 2021 global investor survey by PwC, responses to questions regarding ESG reporting showed not only a lack of information regarding company plans for reaching environmental and social commitments being shared with investors, but also a lack of faith in the quality of the reporting they do receive.*



# A Litmus Test for Methane Certification

The time is now to set up the rules of the road for a certified gas market that will rapidly draw down methane emissions and give U.S. producers the leading advantage.

ARTICLE BY  
**LARA OWENS**  
MIQ

**W**ith certified gas based on methane performance taking off so fast, let's take a minute and think about the impact this could make. Methane is an extremely powerful greenhouse gas: 86 times more impactful than CO<sub>2</sub> on a 20-year time horizon.

If a global market were to develop and mandate no greater than 0.2% leakage of methane worldwide by the end of the decade, we could eliminate 5.7 Gtons of CO<sub>2</sub>e. This is the equivalent of all the yearly emissions generated by the U.S. and is arguably the most ambitious role that oil and gas producers can play this decade in meeting a 1.5 C future.

In moving forward with certification, U.S. operators would have the leading advantage at meeting international import standards, state and utility performance targets, as well as pave the way for new and improved forms of emissions and ESG disclosures using measurement.

A certified gas market based on methane emissions can play a major role in achieving these goals—and quickly—whereby buyers will have the opportunity to demand the lowest emissions from every basin in the world.

So, what do we need to do to create a certified

gas market that is both successful and impactful?

Effective and efficient markets must be transparent and credible. Given the rising opportunity for a certified gas market, it's time to establish basic principles for all programs participating in this space to work toward. And because details matter, we cannot rely on platitudes to get us very far.

As we've seen with attempts at market developments in other sectors, the risk of greenwashing is real and must be taken seriously, as the promise of a certified gas market can be undone as fast as it was created. Because corrections to deception or bogus instruments will lag behind market uptake, it is imperative to bake credible principles into the foundation and not try to retroactively bolt them on afterward.

## Key principles

With 2025 and 2030 emission reduction targets looming, we don't have time for corrections to take place organically. Let us all agree that it is our responsibility to live up to these common-sense principles and avoid the undoing of the market itself.

The following principles are a good starting point for a burgeoning environmental attribute

market. Producers, buyers, regulators, stakeholders only need to ask themselves, “Would I settle for lower standards in any other financial instrument? Would I put my investments at risk with anything less?”

A transparent and credible certified gas market can be achieved through the following principles and litmus tests:

### Principle 1: Transparent, robust standards

#### Litmus Test:

- Is the certification standard publicly available?
- Does the standard have clear metrics, and are they reproducible, auditable?
- Does the standard allow apples to apples comparison of natural gas methane intensity?
- Do the metrics allow quantification and uncertainty in methane emissions?
- Does it use the most up-to-date methane science and stakeholder feedback to build its framework?
- Are they calibrated over time to reflect impact and accuracy?

### Principle 2: Third-party audits

#### Litmus Test:

- Is the auditor a subject matter expert and accredited to the standards?
- Is the auditor independent from the data and data provider?
- Is the auditor independent from the operator?
- Is the auditor independent from the certifier?
- Is there a financial, contractual, and reputational separation between the above parties to avoid conflict of interest?

### Principle 3: Facility-wide certification

#### Litmus Test:

- Is the certification facility-wide, so as to avoid “cherry picking” only the best assets?
- Is the certification facility-wide, so as to include all assets—including those that are older, marginal producers with higher potential for emissions?
- Does the overall physical gas from the operator

continue to represent the environmental attributes of the certification?

- If a third-party investigation were to review the facility’s assets, would they find no major discrepancies?

### Principle 4: Marketable

#### Litmus Test:

- Is a Digital Registry used for all natural gas certifications and subsequent trades?
- Does it have policies and governance in place to avoid double counting?
- Is the certification standard technology neutral to enable scalability and innovation of the market to fulfill the need for methane mitigation tools?
- Does it support the entire natural gas supply chain?
- Is it adoptable by global natural gas markets and regulators?

For methane certification to have maximum impact, or to pave the way for smart regulation, a certified gas market must have robust, defensible standards and consist of a credible and transparent foundation. Civil society organizations, like EDF, are already taking a close look at certifications and the risks they pose for the gas industry if set up incorrectly.

This is the right time to set up the rules for a certified gas market that will be viewed as credible by participants, and that will rapidly draw down methane emissions in the process. Trying to bolt on market rules and principles after the fact will only yield continued methane emission releases and a dysfunctional market. Producers, regulators, buyers and other stakeholders need to adopt these basic principles as elemental to any certified gas market in order to launch it for all of its significant potential. 

*Lara Owens is MiQ’s director of science and technology. She works out of Boulder, Colo., for RMI, MiQ’s parent NGO, where she directs several initiatives promoting credible tracking and visibility of greenhouse-gas emissions from the oil and gas and landfill sectors.*



# Money Left On The Table

Companies that embrace diversity across all levels of their workforce also embrace wider profit margins. Why has the oil and gas sector been slow to adapt, and is it changing fast enough?

ARTICLE BY

**JOSEPH MARKMAN**  
SENIOR EDITOR

**H**illary Holmes has heard it before and will hear it again.

The reason there are so few women in C-suites and boardrooms across the oil and gas industry, a leading male industry executive explained to her recently, is that there aren't many qualified women to move into those positions.

"My response is always, if you can't find women to add to the leadership ranks, to your directors and to your C-suites in this industry, then you're not looking hard enough," Holmes, partner in the Gibson, Dunn & Crutcher law firm, told Hart Energy. "And you're not using forward-thinking and being innovative about where to find that talent."

The workplace diversity issue boils down to two salient points:

- A company will only achieve a diverse workforce across all levels, including the C-suite, when its CEO is committed to diversity; and
- Companies with diverse workforces make more money.

A STEM-energized education system nearly doubled the annual number of engineering degrees awarded from 1990 to 2018, according to data from the National Science Foundation and Engineering Workforce Commission, with the absolute number received by women soaring 172.5% during that time.

So, the talent is there, but the oil and gas industry struggles to attract and retain it.

The numbers are telling: Women account for 57% of all college graduates and 35% of graduates in STEM fields, according to the Brookings Institution. However, they only account for 13.9% of graduates in mechanical engineering and 17.1% in petroleum engineering.

"The industry's appeal is declining among younger people," said McKinsey & Co. in its "How women can help fill the oil and gas industry's talent gap" report. "A decade ago, oil and gas was the 14th most attractive employer among engineering and IT students; now it is 35th."

Why?

## Where did they go?

"Part of it is an image issue," Holmes said. "It's historically been a male-dominated industry and white-dominated industry. I think maybe some of the talent coming out of colleges or coming out of vocational schools makes this industry as strong as it is, they are just not putting oil and gas jobs on their list."

But the industry does succeed in hiring thousands of new grads each year. A survey by the World Petroleum Council of young oil and gas employees showed enthusiasm for participating in the energy transition. Working in a multicultural and high-tech environment were also high priorities for both men and women under 35.

These are ambitious, long-term goals. But we know what happens next. Women constitute more than one in four entry-level workers in the

**"If you can't find women to add to the leadership ranks, to your directors and to your C-suites in this industry, then you're not looking hard enough."**

—Hillary Holmes, *Gibson, Dunn & Crutcher*



oil and gas industry, but only one in six managers, one in 10 vice presidents and one in 50 in C-suite roles. As the Conference Board found in 2021, the energy business was not just the worst among major sectors in the number of women CEOs but was trending downward.

**“An oil and gas company is not going to be successful if it can’t attract the top talent, and it’s not going to attract the top talent without an effective and clear diversity strategy.”**

—Katie Mehnert, *Ally Energy*



76,000 people, or 21% of its Texas workforce, according to data from the Bureau of Labor Statistics. It has since hired back about half of that total. Those who stayed witnessed how quickly a career can be upended in a cyclical industry.

Others were simply poached by competing industries such as utilities, renewables and technology.

“There are tons of them that went to Apple, Meta or Google, and they’re not coming back,” Katie Mehnert, founder and CEO of Ally Energy, told Hart Energy. “And it’s because they’re getting the pay and they’re getting the flexibility, and this is where oil and gas and energy needs to become more competitive.”

“A lot of folks are leaving. A lot of people walking out the door, saying, ‘You know, I can get more down the road in the tech industry than working in energy.’”

Holmes has seen it too.

“It’s something oil and gas companies should pay attention to, but it’s also a playbook that we can learn from,” she said. “Let’s pull talent from tech companies. Let’s pull talent from ... an energy transition or energy expansion company. There are some carbon capture companies I work with now that you would consider innovative. Several of those leadership teams are former oil and gas executives.”

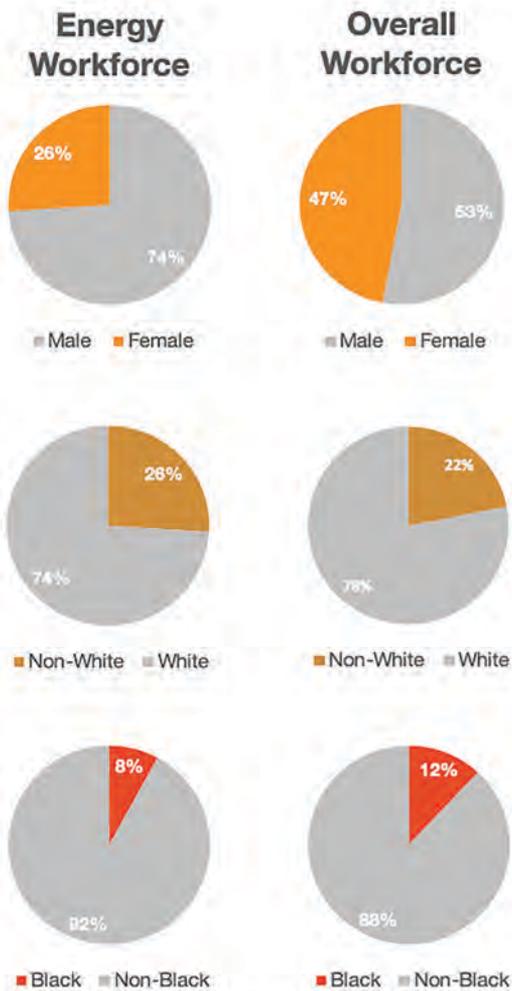
The talent drain is not necessarily a diversity issue, but it highlights the sector’s retention problems.

**Fending off poachers**

Where did the enthusiasm for bringing about the energy transition go among one of three young women working in the energy field? Where did the workers go?

Some were laid off. When the COVID-19 pandemic struck, the oil and gas industry let go

**Comparative Demographics**



Source: U.S. Department of Energy

**Money follows the diversity**

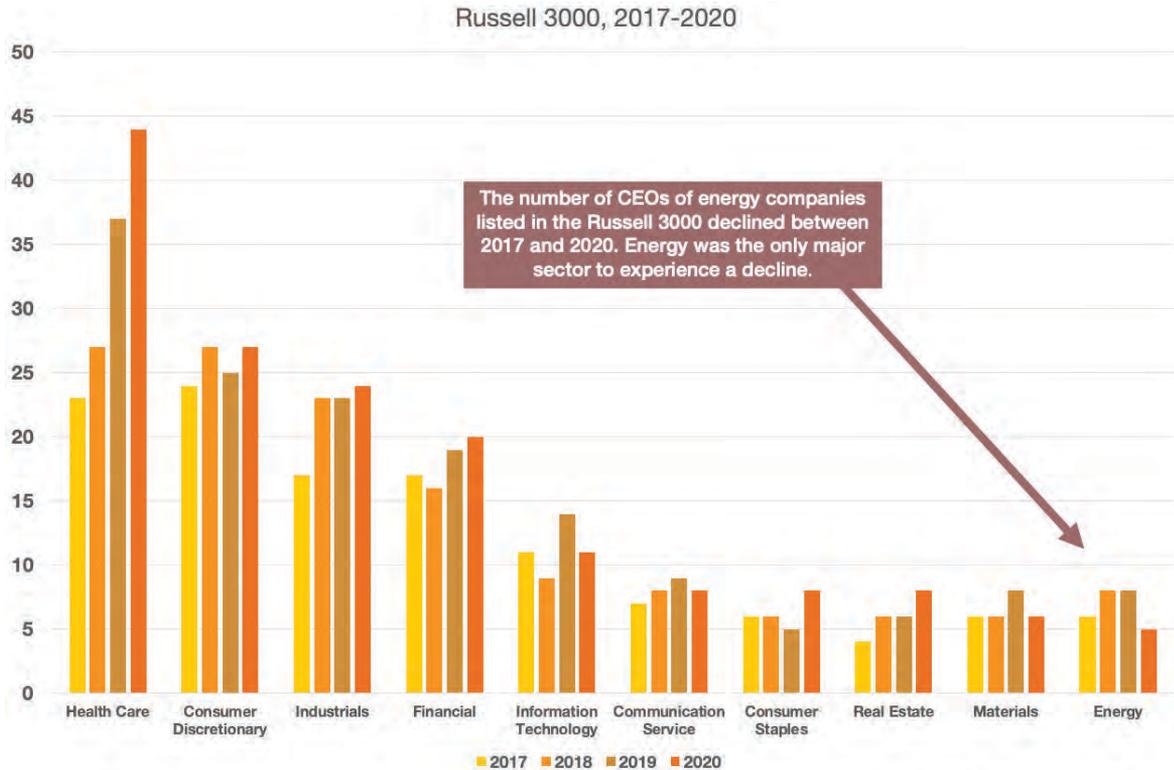
“An oil and gas company is not going to be successful if it can’t attract the top talent, and it’s not going to attract the top talent without an effective and clear diversity strategy,” she said.

Empirical data support the notion that companies across all industries that are more diverse experience bigger profit margins. McKinsey & Co. found that companies in the top quartile for gender diversity on executive teams were 21% more likely to have above-average profitability than companies in the bottom quartile. Top-quartile companies in ethnic and cultural diversity were 33% more likely to outperform on profitability.

Harvard Business Review examined an industry that, like energy, is dominated by white males. The research revealed that performance in the “staggeringly homogeneous” venture capital (VC) industry—only 8% of VC investors are women, 2% are Hispanic and less than 1% are black—was improved by diversity. An investment’s comparative success rate was reduced by 26.4% to 32.2% when executed by a team of shared ethnicity.

That success was echoed on the gender diversity side.

## Female CEOs By Business Sector



“Venture capital firms that increased their proportion of female partner hires by 10% saw, on average, a 1.5% spike in overall fund returns each year and had 9.7% more profitable exits (an impressive figure given that only 28.8% of all VC investments have a profitable exit),” the authors wrote.

Fortunately, the oil and gas industry has made significant strides in that direction.

“The vast majority of the oil and gas companies I work with have taken affirmative steps to improve diversity, at least at the leadership level,” Holmes said. “At least in their boardroom—those that are publicly traded—at least in their C-suite to the extent possible.”

### Starts at the top

To reap the benefits, it’s critical that a company’s leadership reflects the characteristics they want from their broader workforce. If oil and gas CEOs commit to gender balance, the World Petroleum Council said in its report, the organizations will follow.

The comparison charts of surveys of male oil and gas employees conducted in 2017 and 2020 bear that out. When gender diversity was not important to the CEO, it was not important to 59% of the male employees, either, in the 2017 survey. When it was important to the CEO, that view was shared by 86% of male employees.

An interesting shift took place between 2017 and 2020 among those working for a CEO for whom gender diversity was not important. In 2017, 34% of the male workforce thought gender diversity was important, contrary to what the boss thought. After three more years of working for a CEO who did not consider it to be important, that percentage dropped sharply to 19%.

On the flip side, the share of men whose CEO saw gender diversity as important grew to 93%, with the percentage considering it unimportant or very unimportant diminished to 2%. Either way, the boss set the tone for the workforce.

“To provide effective leadership in this area, leaders must consistently and frequently reinforce the strategic importance of D&I [diversity and inclusion], through their actions and their words,” the report’s authors wrote.

Holmes would like those who lead the oil and gas industry to think more broadly about the talent pool and make it a priority.

“A woman shouldn’t get a job just because she’s a woman,” she said. “But the board or the C-suite should always be thinking: Is our management team bringing diverse perspectives?”

That includes diversity of experience, age, gender, race and other characteristics on the matrix.

“If we do,” Holmes said, “then that will contribute to a more profitable company.”

# Technology Development Drives ESG Advances

Oilfield services companies are developing tools that help operators quantify ESG performance improvement.

ARTICLE BY  
JUDY MURRAY  
CONTRIBUTOR

Attitudes about ESG are changing. What began as a demand from investors and financial institutions has become an integral component of the business strategy for energy companies and is now a primary driver for technology development.

According to Attilio Pisoni, head of strategy and technology at Baker Hughes Oilfield Services, sustainability is essential, and emissions reduction in particular has become a moral and ethical obligation.

All new technologies being introduced by Baker Hughes must reduce emissions and allow more efficient operations, he said. "From a technical point of view, new tools that have a lower impact on our environment are also more efficient and will cost less to operate, and that strengthens the case for designing technologies that are more sustainable. Efficiency has a direct correlation with emissions."

Pisoni explained how that works in practice. "If we reduce our Scope 3 emissions, we are aligning with customers and helping them reduce Scope 1 and Scope 2 emissions. It's a very serious commitment."

## Digital tech

Pisoni pointed to several Baker Hughes offerings that help accomplish that goal, including LUMEN Sky, aerial drone-based digital methane monitoring, and LUMEN Terrain, continuous ground-based digital methane monitoring, which help operators identify and reduce fugitive methane emissions. Another product, flare.IQ, collects data from the flare meter along with gas composition from the gas analyzer and process pressure and temperature (P/T) readings using an asset's Distributed Control System. There is digital verification when the flare process stabilizes. Then, a proprietary, patented algorithm is applied to calculate theoretical sound speed based on gas composition and P/T and compare it with measured sound speed from the meter to digitally verify that the meter has passed inspection.

Digital technologies will be increasingly important for operators, Pisoni said, and Baker Hughes' new products and services will incorporate these technologies to enable quantifiable metrics to be captured to simplify ESG reporting.

"The biggest impact we can make as an industry to society as a whole in terms of climate change is also the biggest impact we can have for our customers," he said.



**"If we reduce our Scope 3 emissions, we are aligning with customers and helping them reduce Scope 1 and Scope 2 emissions. It's a very serious commitment."**

—Attilio Pisoni,  
Baker Hughes Oilfield Services

Wayne Richards, president and CEO of GR Energy Services, said for his company, reducing carbon emissions is always a part of how it delivers service at the well site.

"That's one thing we can control in the field," he said. "When you look at the development of our technologies—either internal development or those technologies we brought in externally—they are all geared around reducing our carbon footprint."

In practice, managing CO<sub>2</sub> output takes many forms. One of these is something Richards calls vehicle rationalization—promoting carpooling, encouraging employees to leave cars at the shop on days off and sharing vehicles on site. Through vehicle rationalization, "the company has cut vehicle use by more than 30%," he said.

GR Energy Services also has installed ECU Power Drive devices on its fleet, which allow vehicles to idle in a mode that uses less fuel and produces less exhaust. Together, these initiatives have made a significant difference, Richards said, resulting in fewer vehicles in use as well as less idling time at the well site.

"The development of all of our technologies for perforating and plug and perf operations are built with the goal of having fewer people at the well site," Richards said. "We also invested in our gun system to improve efficiency."

With those efficiency gains, the ZipFire perforating system saves 1,600 gallons of fuel, decreases water usage and reduces carbon emissions by 16



**“When you look at the development of our technologies—either internal development or those technologies we brought in externally—they are all geared around reducing our carbon footprint.”**

—Wayne Richards, GR Energy Services

metric tons per quarter, he said. “We are making 1,100 to 1,200 runs without failure.”

Electrification is another component of the carbon reduction program. GR Energy Services has four electric trucks in its fleet today, and more will be added soon. “In the next year, about half of our units will be electric,” Richards said, noting that the pace of adding units is constrained by supply chain limitations that preclude getting electrified units to the site more quickly. “Right now, it’s a seven- to nine-month process,” he said.

“Together, all the things we are doing help in our efforts to be good citizens,” Richards said. “We have to do more with less to be competitive. It’s a smart way to do business.”

### Data modeling

Andres Cabada, director of global stewardship and sustainability at Halliburton Co., said his company centers its ESG objectives on extracting oil and gas while reducing the environmental footprint by focusing on execution.

“We identify priorities and then change activities and behaviors to lower our and our customers’ impact,” he said.

“Emissions are top of mind, but we also recognize, as we engage with operators, that some issues are local in nature,” Cabada explained, noting that in areas such as the water-stressed Permian Basin, water preservation is critically important. “Marrying global priorities and local challenges pays off in all different ways,” he said.

***In third-quarter 2021, electric truck use reduced engine usage by 1,642 hours, saved 2,463 gallons of fuel and decreased the carbon footprint by 24.63 metric tons of CO<sub>2</sub> equivalent.***





**“We identify priorities and then change activities and behaviors to lower our and our customers’ impact.”**

—Andres Cabada, *Halliburton Co.*

“To drive this through our technology processes, we follow a well-structured lifecycle, stage-gate process. We’ve embedded sustainability as a swim lane in that process so we can identify opportunities where a product may have a favorable impact,” Cabada explained.

In his view, three things accelerate change: data modeling, improved equipment and automation and translating existing knowledge into new applications.

Cabada defines data modeling as everything from quantifying emissions across the life cycle to building subsurface models for CO<sub>2</sub> storage to managing disparate sources of data for quantifying emissions. Intelligent data modeling identifies a robust process that helps customers focus on strategy and change rather than simply tracking emissions.

He provided several examples to illustrate how Halliburton improves ESG performance via automation and equipment, including the Cognitus automated cementing platform that enables an onshore cement operator to manage the offshore process, and the Zeus electric pump, which is the industry’s first pumping unit capable of achieving sustained activity at 5,000 hydraulic horsepower. The unit’s electric-based powertrain enables pumping at higher rates with a smaller footprint and allows for seamless rate changes without lag times during rate transitions.

Combining the pump with an electric blender and electric wireline unit, the company is delivering value through expanded electrification, Cabada said. 



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# Putting Water To Work

The reuse of produced water is on the rise as water management evolves.

ARTICLE BY  
**ANNA KACHKOVA**  
CONTRIBUTOR

**T**he shale industry's approach to water management is evolving against the backdrop of increased water usage by operators and the recent focus on ESG performance.

One significant trend is the rise of produced water recycling, as operators minimize water disposal and step up reuse. The buildout of water infrastructure has taken place and attitudes toward sharing of recycled water in the Permian Basin have shifted. Some water companies are also exploring the possibility of treated and recycled water from shale operations being used by other industries too.

There is still scope for the industry to further improve its water management performance, but significant strides forward have been made, especially in recent years.

## On the up

"Water is essential, and the ability to have proven takeaway and reliable access to water when you're fracking becomes critically important, so everybody is focused on more effective water management," Aris Water Solutions' president and CEO, Amanda Brock, told Hart Energy.

Water requirements for shale producers have evolved alongside drilling practices. As the industry has sought to become more efficient, especially during the downturns of recent years, it increasingly pursued wells with longer laterals, as well as multiwell pad drilling, simultaneous fracking and other ways of maximizing output. All of this has driven up water demand.

According to water management company XRI's CEO, Matt Gabriel, less than a decade ago, well completions required on average one-fifth the amount of water that they do today.

"Almost exclusively back then, it was a freshwater solution that was provided," Gabriel told

Hart Energy. XRI, which focuses on the recycling of produced water, saw this as unsustainable. The company treats disposal of such water as a last resort.

"About 80% of the produced water we touch every day is recycled and reused," Gabriel said. "Our current average high-water mark is about a million barrels a day of recycled volumes that's going back into the system for reuse by customers."

Like XRI, Aris has also seen demand for recycled water rise.

"Being concerned about environmental impacts and their water footprint, you are seeing rapid adoption of the use of recycled produced water," Brock said.

Aris recycles around 400,000 bbl/d of water across eight locations in the Permian Basin and continues to expand its footprint.

"Our customers—being majors, large independents and privates—are all wanting as much access



**"Our customers—being majors, large independents and privates—are all wanting as much access to recycled water for use in their operations as they can get."**

—Amanda Brock, Aris Water Solutions

**XRI treats and recycles approximately 1 MMbbl/d of produced water throughout the Midland and Delaware basins.**



to recycled water for use in their operations as they can get,” said Brock.

Chevron Corp. recently provided an update on the agreement it had struck with Aris in May. The deal, Chevron noted, puts the company on a path to using 80% recycled produced wastewater for its fracking operations across most areas by the end of 2023. A Chevron spokesperson told Hart Energy that the company used no fresh water for fracking in 2021, and 99% of its Permian water needs that year were satisfied by brackish or recycled sources. The company’s next goal is to phase out brackish water, which accounted for 55% of its Permian water use last year, replacing it with treated produced water, even as it ramps up production in the basin and its water needs increase.

**Sharing water**

Notably, Chevron has said that the produced water not required for its own fracking operations can be transported to be used by other operators where possible. This illustrates an emerging willingness for Permian operators to share water resources that had not been there previously.

“There was a chain-of-custody concern that existed a few years ago that intellectually producers have overcome,” said Gabriel. “We went from, two years ago, a prohibition on using one super major’s produced water for another, to now an actual encouragement, to incentives. If we give them enough notice, they’ll be sure there’s more water available.”

This continued sharing of water and water infrastructure is one area where Gabriel sees

potential for improved performance when it comes to water management. Permian producers are now beginning to follow in the footsteps of Appalachian operators, who have a more established history of water sharing, according to Olympus Energy LLC’s chief operating officer, Mike Wahl.



**“About 80% of the produced water we touch every day is recycled and reused.”**

—Matt Gabriel, XRI

“That’s been part of the legacy in the history up here in Appalachia, so it’s a little bit different than the Permian,” Wahl told Hart Energy. “We’ve got active partnerships and relationships with most, if not all, of our major neighboring operators to do exactly that, to maximise the recycling and reuse across the system. It’s been a priority for a number of years up here, and it’s one that the operators in this region take very seriously,” he said.

Olympus has gone over three years without trucking fresh water to its completions, Wahl noted. The company recently received a certification from Project Canary that includes the highest available rating for its water recycling program.

**Exploring options**

A number of new ways for managing water are now being explored across the industry. Both Olympus on the operator side and Aris on the service provider side are involved in the U.S. Department of Energy’s Produced Water Application for Beneficial Reuse, Environmental Impact and Treatment Optimization (PARETO) initiative. Aris said it serves as a real-world case study for PARETO, while Olympus is collaborating on the development and testing of produced water optimization software through the initiative.

Aris is also involved in a study with Texas A&M University aimed at the utilization of treated produced water for nonconsumptive crop irrigation. This is part of Aris’ approach of treating produced water as waste-to-asset that can be repurposed to benefit other industries and stakeholders beyond oil and gas.

XRI is also exploring produced water’s potential to be beneficial beyond the oil and gas industry.

“Environmental discharge is something we’re excited about, with large-volume networks treating water to match the region’s groundwater quality



**“We’ve got active partnerships and relationships with most, if not all, of our major neighboring operators ... to maximise the recycling and reuse across the system.”**

—Mike Wahl, Olympus Energy LLC

and then extensively building intentional marshlands with grass, and reeds and things that would actually be a carbon consumer,” said Gabriel. This would require an environmental discharge permit and managing the water quality to be as clean as the local groundwater, which Gabriel said would not be cheap.

“But with scale, we’re able to get it to ostensibly match produced water disposal costs, close enough that we think this could be a major disrupter to traditional downhole disposal,” he said.

**UPCOMING GUEST SPEAKERS**



SEPTEMBER  
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PRESIDENT & CEO,  
EQT CORPORATION



OCTOBER  
**MIKE MINAROVIC**  
CEO & CO-FOUNDER,  
ARENA ENERGY



NOVEMBER  
**TIMOTHY DUNN**  
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# WHY SAVVY CAPITAL PROVIDERS HAVE OIL AND GAS ON THEIR MINDS

Industry executives gathered at the IPAA's Annual Meeting to tell why fossil fuels are still important, and why investors are taking notice once again.

ARTICLE BY



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If there were any thoughts about U.S. oil and gas producers shrugging their shoulders, giving up and disappearing sheepishly into the night at the hands of challenges from environmentalists and elected officials, think again.

Speakers and attendees on hand at the International Petroleum Association of America's (IPAA) annual meeting on July 21 at The Broadmoor in Colorado Springs, Colo., said it's time to tighten their boot straps and get to work setting the record straight—to the public and investors—about the importance of fossil fuels to modern and future society.

The tone for the day was set early as popular author and energy philosopher Alex Epstein took the stage to discuss what he's been writing about for years now: "why global human flourishing requires more oil, coal and natural gas—not less." Epstein touted the work of a growing number of industry executives and select politicians who have stepped out of the background and worked to take back the narrative on the importance of oil and gas around the world.

"We're seeing more and more people stand up in an articulate way. I also think we are seeing more and more elected officials speaking up in an articulate way," Epstein told the audience.

He went on to say that cost-effective energy is necessary for human flourishing and billions of people around the world still lack access to cost-effective energy. Solar, wind and other renewables, although part of the future energy mix, are still hampered by high costs and need subsidies and mandates, rendering them unable to truly be scalable to the world's needs right now.

That means oil and gas producers are still very much on the front lines of ensuring energy security around the globe.

Investors are starting to agree—again.

Oil and gas is starting to show green shoots of rejuvenated opportunity for investors, according to panelists on a public capital roundtable.

Independent producers today are creating large cash flow. Commodity prices are allowing them to do what shareholders have been asking them to do for years—to return capital and remain disciplined, according to Steve Trauber, vice-chairman and global co-head of natural resources and clean energy transition at Citi.

Trauber indicated the mindset has changed as the sector had faced underinvestment in recent years in

the wake of environmental pressure by the public and politicians. With energy security on the table, investment in infrastructure and fossil fuel production has come back into the spotlight. "It's energy addition, not transition," he said.

One of the questions is whether those investors who have left the sector will return. During a panel on private capital, Jason DeLorenzo, managing partner at EnCap Investments LP, said he thinks there's still an appetite for the sector out there on the equity side. "I think there will continue to be capital available but not like it was," he added.

On the same panel, Kristin Kelly, senior vice president at EIG Global Energy Partners, agreed with DeLorenzo, saying: "Maybe the guys who had stepped out with one toe [will get back in]."

Regardless of private or public capital, the big conversation in boardrooms and among capital providers still revolves around ESG, according to the panelists.

"You do have to acknowledge, while investors are coming back into the sector, they want to see you have some commitment in the ESG space," said Hallie Vanderhider, investor and board member at EQT Corp., who shared the stage on the public capital panel with Trauber and Kelly.

U.S. LNG is the true answer to lowering emissions and energy scarcity around the world, she said, agreeing with what EQT's CEO Toby Rice has been speaking about throughout the industry lately.

Meanwhile, banks are looking for progress on sustainability from producers because it has become a requirement, according to Trauber. "The banks have all gone to net-zero 2050," he said. That means the banks, like Citi, will need to show improvement in their portfolios in regards to sustainability even by 2030. 

# Events Calendar



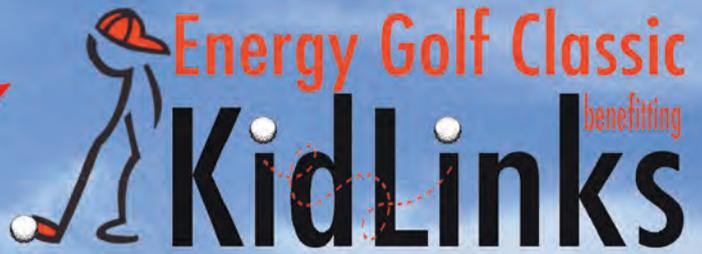
The following events present investment and networking opportunities for industry executives and financiers.

EVENT	DATE	CITY	VENUE	CONTACT
<b>2022</b>				
<b>Energy ESG Conference</b>	<b>Sept. 8</b>	<b>Houston</b>	<b>Royal Sonesta</b>	<b>hartenergyconferences.com</b>
GPA Midstream Convention	Sept. 11-14	San Antonio	Marriott Rivercenter	gпамidstreamconvention.org
<b>America's Natural Gas Conference</b>	<b>Sept. 27</b>	<b>Houston</b>	<b>Royal Sonesta</b>	<b>hartenergyconferences.com</b>
North American Gas Forum	Oct. 24-26	Washington, D.C.	Park Hyatt Washington, D.C.	energy-dialogues.com/nagf/
<b>Energy Capital Conference</b>	<b>Oct. 25</b>	<b>Dallas</b>	<b>Fairmont Hotel</b>	<b>hartenergyconferences.com</b>
<b>A&amp;D Strategies and Opportunities Conference</b>	<b>Oct. 26</b>	<b>Dallas</b>	<b>Fairmont Hotel</b>	<b>adstrategiesconference.com</b>
<b>Executive Oil Conference</b>	<b>Nov. 15-16</b>	<b>Midland, TX</b>	<b>Midland County Horseshoe Pavilion</b>	<b>executiveoilconference.com</b>
OK Petroleum Alliance Fall Conference	Nov. 16-17	Oklahoma City	The National Hotel	thepetroleumalliance.com
SPE Innovation & Entrepreneurship Summit	Dec. 7-8	Houston	Norris Conference Centers	spegccs.org
<b>2023</b>				
IPAA Private Capital Conference	Jan. 19	Houston	The Post Oak	ipaa.org
NAPE Summit	Feb. 1-3	Houston	George R. Brown Conv. Ctr.	napeexpo.com
<b>Women In Energy Luncheon</b>	<b>Feb. 7</b>	<b>Houston</b>	<b>Hilton Americas-Houston</b>	<b>hartenergyconferences.com</b>
The Energy Venture Investment Summit	Feb. 16-17	Golden, CO	The Colorado School of Mines	theenergyventuresummit.com
Energy Sustainability Forum	Feb. 22-23	Houston	Petroleum Club of Houston	www.usenergystream.com/
<b>DUG Midcontinent</b>	<b>March 1-3</b>	<b>Oklahoma City</b>	<b>Oklahoma City Conv. Ctr.</b>	<b>dugmidcontinent.com</b>
CERAWeek by S&P Global	Mar. 6-10	Houston	TBD	ceraweek.com
The Energy Summit of Texas	Mar. 21	Tyler, TX	Green Acres Crosswalk Conf. Ctr.	tylertexas.com
<b>DUG Haynesville</b>	<b>Mar. 28-29</b>	<b>Shreveport, LA</b>	<b>Shreveport Convention Center</b>	<b>dughaynesville.com</b>
Energy Workforce & Technology Council Annual Mtg.	April 26-27	Austin, TX	Omni Barton Creek Resort & Spa	energyworkforce.org
Offshore Technology Conference	May 1-4	Houston	NRG Park	2023.otcnet.org
Williston Basin Petroleum Conference	May 16-17	Regina, Saskatchewan	Delta Hotels Marriott Regina	wbpc.ca
AGA Financial Forum	May 20	Fort Lauderdale, FL	Ft. Lauderdale Marriott Harbor Beach	aga.org
<b>DUG Permian &amp; Eagle Ford</b>	<b>May 22-24</b>	<b>Fort Worth, TX</b>	<b>Fort Worth Convention Center</b>	<b>dugpermian.com</b>
Louisiana Energy Conference	May 31-June 2	New Orleans	The Ritz-Carlton New Orleans	louisianaenergyconference.com
CIPA Annual Meeting	June 8-11	TBD	TBD	cipa.org
<b>DUG East</b>	<b>Nov. 29-30</b>	<b>Pittsburgh</b>	<b>David L. Lawrence Conv. Ctr.</b>	<b>dugeast.com</b>
<b>Monthly</b>				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Thursday, odd mos.	Fort Worth	Fort Worth Petroleum Club	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed, even mos.	Tyler, TX	Willow Brook Country Club	etxadam.org
ADAM-Houston	Third Friday	Houston	Brennan's	adamhouston.org
ADAM-OKC	Bi-monthly (Feb.-Oct.)	Oklahoma City	Park House	adamokc.com
ADAM-Permian	Bi-monthly	Midland, TX	Midland Petroleum Club	adampermian.org
ADAM-Tulsa Energy Network	Bi-monthly	Tulsa, OK	The Tavern On Brady	adamtulsa.com
ADAM-Rockies	Second Thurs./Quarterly	Denver	University Club	adamrockies.org
Austin Oil & Gas Group	Varies	Austin	Headliners Club	coleson.bruce@shearman.com
Houston Association of Professional Landmen	Bi-monthly	Houston	Houston Petroleum Club	hapl.org
Houston Energy Finance Group	Third Wednesday	Houston	Houston Center Club	hefg.net
Houston Producers' Forum	Third Tuesday	Houston	Houston Petroleum Club	houstonproducersforum.org
IPAA-Tipiro Speaker Series	Second Wednesday	Houston	Houston Petroleum Club	ipaa.org

Email details of your event to Brandy Fidler at [bfidler@hartenergy.com](mailto:bfidler@hartenergy.com).

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# PRODUCERS PUSH FORWARD WITH CO<sub>2</sub> PROJECTS

Denbury Inc. and Occidental Petroleum Corp., known for their EOR activity, look to expand their CO<sub>2</sub> carbon capture midstream operations.



ARTICLE BY

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**T**wo producers known for their EOR activity announced major plays to expand their CO<sub>2</sub> midstream operations in Louisiana within just a few weeks of each other.

Despite the recent developments, one analyst said that the current U.S. policy is insufficient to justify carbon capture, utilization and sequestration (CCUS) projects attached to the largest stationary sources.

Meanwhile, in Canada, the province of Alberta kicked off its carbon sequestration hub initiative to invest up to CA\$20 billion in carbon capture projects, including proposed storage hubs by Enbridge Inc., Pembina Pipeline Corp. and Shell Plc.

Here is a roundup of the latest midstream developments in the carbon management space.

## **Denbury expands La. capacity**

In late July, Denbury Inc. leased 18,000 acres near Donaldsonville, La., in Assumption and St. James parishes to be used for a future CO<sub>2</sub> sequestration project. The site is less than 5 miles from the company's CO<sub>2</sub> Green Pipeline. There is about 50 million metric tons (MMmt) per year of CO<sub>2</sub> emissions within 30 miles of the site, the company estimated.

Denbury anticipates the ability to expand its total CO<sub>2</sub> sequestration site capacity to approximately 1.5 Bmt with the new addition. The new site will have a total sequestration capacity of more than 80 MMmt of CO<sub>2</sub> because of its thick, laterally extensive, low-dip

reservoirs. First potential injection could be in 2025.

Nik Wood, Denbury's senior vice president of carbon, specifically noted the company's "track record in providing reliable transportation and secure underground injection of CO<sub>2</sub>," as well as its "ideally positioned infrastructure ... for continued success and growth in carbon capture, sequestration and use."

Just days after completing the lease, Denbury issued its annual corporate responsibility report, noting it had "transported, injected and stored more than 3.7 million metric tons of industrial CO<sub>2</sub>," in 2021.

In the Gulf Coast, Denbury gets its industrial CO<sub>2</sub> from two facilities: one in Port Arthur, Texas, and the other in Geismar, La. For its Rocky Mountain region, industrial CO<sub>2</sub> comes from the Lost Cabin gas plant and the Shute Creek plant in Wyoming. Denbury owns or operates more than 1,000 miles of CO<sub>2</sub> pipelines and continues to expand that network.

"We continue to have ongoing discussions with owners of existing plants of various types that emit CO<sub>2</sub> that we may



be able to transport and store," Denbury said in the report. "To capture such volumes, we [or the plant owner] would need to install additional processing equipment."

The capture of CO<sub>2</sub> could be influenced by potential federal legislation, Denbury noted, which could include incentives for capturing CO<sub>2</sub> emissions. For example, "Section 45Q of the Internal Revenue Code (Title 26 of U.S. Code) is expected to result in significantly increased capture of industrial CO<sub>2</sub>," the report specified. "We believe that we can play a significant role in the capture, transportation and storage of CO<sub>2</sub> because of the scale of our tertiary operations, our pipeline infrastructure and our expertise."

### Oxy increases La. capacity

The Denbury announcement came just a few weeks after Occidental Petroleum Corp.'s Low Carbon Ventures subsidiary 1PointFive and Manulife Investment Management signed an agreement in June to provide 1PointFive with access to subsurface pore space and surface rights to 27,000 acres of Louisiana timberland on which Oxy plans to develop and operate a carbon sequestration hub. It has already filed two required Class VI injection permits.

The two companies are exploring other locations for more carbon capture and sequestration projects throughout the U.S. 1PointFive already has Environmental Protection Agency-approved monitoring, reporting and verification plans for geologic sequestration. Manulife manages about 6 million acres of timberland and about 400,000 acres of farmland in North America and worldwide.

In March, 1PointFive struck a similar deal with timber company Weyerhaeuser for 30,000 acres of sub-surface pore space in Livingston Parish, La. 1PointFive estimates the hub can store as much as 6 MMmt of CO<sub>2</sub> per year. The Livingston hub, which is planned to begin operations in 2025, is expected to include 16 wells: five to six wells to inject CO<sub>2</sub> into the geologic storage formation and eight to 10 wells for monitoring the CO<sub>2</sub> above, below and within the geologic formation.

Separately, Oxy's Project Intersect is expected to capture CO<sub>2</sub> emissions from two of White Energy's West Texas ethanol plants. The captured CO<sub>2</sub> would be transported to Oxy's West Seminole EOR field for injection and storage.

### CCUS cost curve quantified

As noted by Denbury, tax credits for CCUS are addressed under Section 45Q of the Internal Revenue Code.

"Because there is no meaningful market for the CO<sub>2</sub> captured from emissions that provides the economic incentive needed for companies to pursue CCUS on their own, the government must create them," said Steve Hendrickson, president of Ralph E. Davis Associates.

"To date, this has primarily taken the form of tax credits under Section 45Q. However, the amount of the credits and the way they are paid are insufficient to justify CCUS projects attached to the largest stationary sources," he said.

### Alberta's CA\$20 Billion CCUS investment

In mid-July, the province of Alberta said that it is investing more than CA\$40 million (US\$31 million) to underwrite 11 CCUS projects involving as much as CA\$20 billion in capex. The nexus of the effort is the province's carbon sequestration hub initiative. The province has allocated CA\$305 million over four years for carbon capture projects.

In March, Alberta approved six carbon-storage hub projects, including those from operators Enbridge and Pembina as well as Shell and Bison Low Carbon Ventures. The province has stressed the priority of permanent carbon sequestration, open access to all emitters and "affordable" hub usage rates.

The goal of the new funding is to reduce about 24 MMmt of emissions annually, the equivalent of reducing Alberta's annual industrial emissions by almost 10%. The funding is being provided through a program called Carbon Capture Kickstart, part of Emissions Reduction Alberta. Kickstart will help companies to take advantage of the federal government's tax credit for capital invested in CCUS projects starting this year. Natural Resources Canada is also committing up to CA\$50 million through its CCUS Front-End Engineering Design Studies funding program.

Carbon Capture Kickstart projects include: Canadian Natural Resources Ltd., Oil Sands CCUS Pathways to Net Zero in Fort McMurray; Strathcona Resources Ltd., post-combustion flue-gas carbon capture at Cold Lake Region SAGD Facilities; and Suncor Energy Inc., fluid catalytic cracker CO<sub>2</sub> capture process. 

# SENSING A PROBLEM

Companies are turning to robots with sophisticated sensor packages to inspect their onshore and offshore assets.

ARTICLE BY



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*Above, Wood and Xplorobot robots autonomously navigate through live facilities, capturing data to help detect visual, thermal, acoustic, vibration and gas anomalies.*

**A**utonomous inspection robots can detect leaks and corrosion problems during routine inspections. Technology companies Xplorobot and Wood have run a few pilot inspection projects using Boston Dynamics' Spot and SMP Robotics wheeled robots at gas plants and processing plants and aim to take the technology offshore soon.

## Looking for leaks and damage

Using robots for inspections offers several benefits. Together, Xplorobot and Wood have shown robots are detecting methane leaks and corrosion problems during routine inspections. They remove humans from potentially unsafe activities and take over routine and tedious work, decreasing nonproductive time at facilities and freeing up humans to focus on more critical activities.

"Think about the 'people hours' that get burned [with staff] walking these big facilities and doing these routine inspections," Nicholas Pierson, vice president of operations and maintenance for U.S. north and west regions for Wood, said. "Generally, a human shows up with a clipboard, they have a routine route they travel on a frequency from daily to quarterly around critical equipment and facilities. They use their senses to look, listen and smell to detect issues. Nine

times out of 10, the person gets back, clears the route free of problems and goes about their day."

But an autonomous system with higher thermal, visual and acoustic sensors gathers far more data and is more precise in locating a potential problem, Pierson added.

"The robot doesn't get tired. The robot can be around live operating equipment. It removes humans from the live environment on a routine basis, which is good for safety and the ability for sensors to catch things before they become big problems," Pierson said.

With all the benefits of replacing a human inspection by a robot, one of the first questions that comes up is, "Is this going to take away our jobs?" Xplorobot CTO Richard Clarke said. "This is not going to take away anybody's job at this point. Really, we're just going after the mundane tasks."

And whereas a human walking by a piece of equipment that was slowly corroding won't likely notice the deterioration due to day-in, day-out exposure to the equipment, a robot recording higher data about that equipment will pick up the differences over time, Clarke said.

"When there's a lot of rust all over the site, people stop noticing," Clarke said. "Robots won't get bored, they will see it every day and compare it."

Some robots like the EXRobotics or Taurob robots are ATEX rated, which allows them to go into places where explosive gas may be present. Spot is small and agile so it is

**"[The robot] removes humans from the live environment on a routine basis, which is good for safety and the ability for sensors to catch things before they become big problems."**

—Nicholas Pierson,  
Wood



well-suited for tight spaces, while wheeled robots like those from SMP and ClearPath have a broader range and can more easily serve large sites, Clarke said.

"There are pros and cons to different types of robots," he said.

### A sound approach

Earlier this year, TSC Subsea's Acoustic Resonance Technology (ART) detected a hydrate plug in a submerged deepwater Angolan pipeline.

While ART is not new, the company developed an acoustic-sensing equipment package called ART vPush that could be propelled by an ROV to detect a hydrate blockage in a subsea pipeline. The job required partial pre-dredging of the pipeline, the actual ART vPush inspection, and follow-up high-resolution imaging of the ends of the hydrate plug carried out by TSC's Acoustic Resonance Technology External Measurement Inspection System (ARTEMIS).

TSC uses ART to inspect or look inside pipeline walls with "substantial coating on the exterior," said Jonathan Bancroft, TSC Subsea global sales director.

An Italian operator had a submerged 8-inch 3LPP coated water injection line in 1,300-meter (m) water depth that was blocked by a hydrate somewhere in a 12-km stretch of pipeline. DOF Subsea Norway, a contractor for the Italian operator, sub-contracted with TSC Subsea to develop an acoustic method of locating the blockage.

"They wanted a fast and efficient way to locate it and size it accurately," Bancroft said.

TSC developed the ART vPush means of deploying the technology via ROV, and its debut deployment was for the Angola pipeline.

"We developed a slide system to push it along the topside of the pipe by the ROV while looking from the top section into the pipe for any signs of the hydrate plug," Bancroft said.

The resulting vPush is a moving platform that can rapidly assess pipeline contents acoustically over complete pipe runs. It collects real-time data that is sent to the surface via fiber-optic cable, and the data is processed to identify the presence of hydrates.

Rated to 3,000m water depth, it can be deployed via ROV manipulator or fitted directly onto an ROV.

### Preparing for the run

Before the Angolan pipeline could be inspected, it first had to be partially dredged so the vPush could slide along the top of the line.

"By only positioning sensors on the top section of the pipe, we could limit the amount of dredging," Bancroft said.

Dredging was carried out in late 2021. Even though dredging operations had removed the obstructions between 10 and 2 on the clock face, by the time the ART vPush was deployed in January, some sediment had already settled on top of the line.

"We needed a low-pressure jetting system to jet away the loose debris as it was moving along the pipeline," Bancroft said.

The ART vPush was deployed from a DOF Subsea ROV. It carried out the 12-km inspection in one 33-hour run from an ROV operating at about half a knot speed, Bancroft said.

TSC Subsea's ART works by emitting a sound signal toward a target, such as the pipeline wall, and records the returning sound signal after it resonates in the target, identifying the resonant frequencies, which allows for direct measurement of the target's thickness.

Once the ART vPush located the start of the hydrate plug, it continued to scan until it reached the end of it.

"We were able to give an accurate size of the plug," Bancroft said.

With the endpoints of the plug defined, it was necessary to fully dredge around those locations to allow ARTEMIS to carry out high-resolution imaging of the ends of the hydrate.

Subsea "acoustic hydrate detection didn't exist before this," he said.

One reason is that acoustic sensing generates a vast amount of data, and that data must be sent from subsea to the surface, said Rolf Sporkel, TSC Subsea business development manager.

"This amount of data needs to fly in a very short time to maintain the speed of the movement of the vPush," he said.

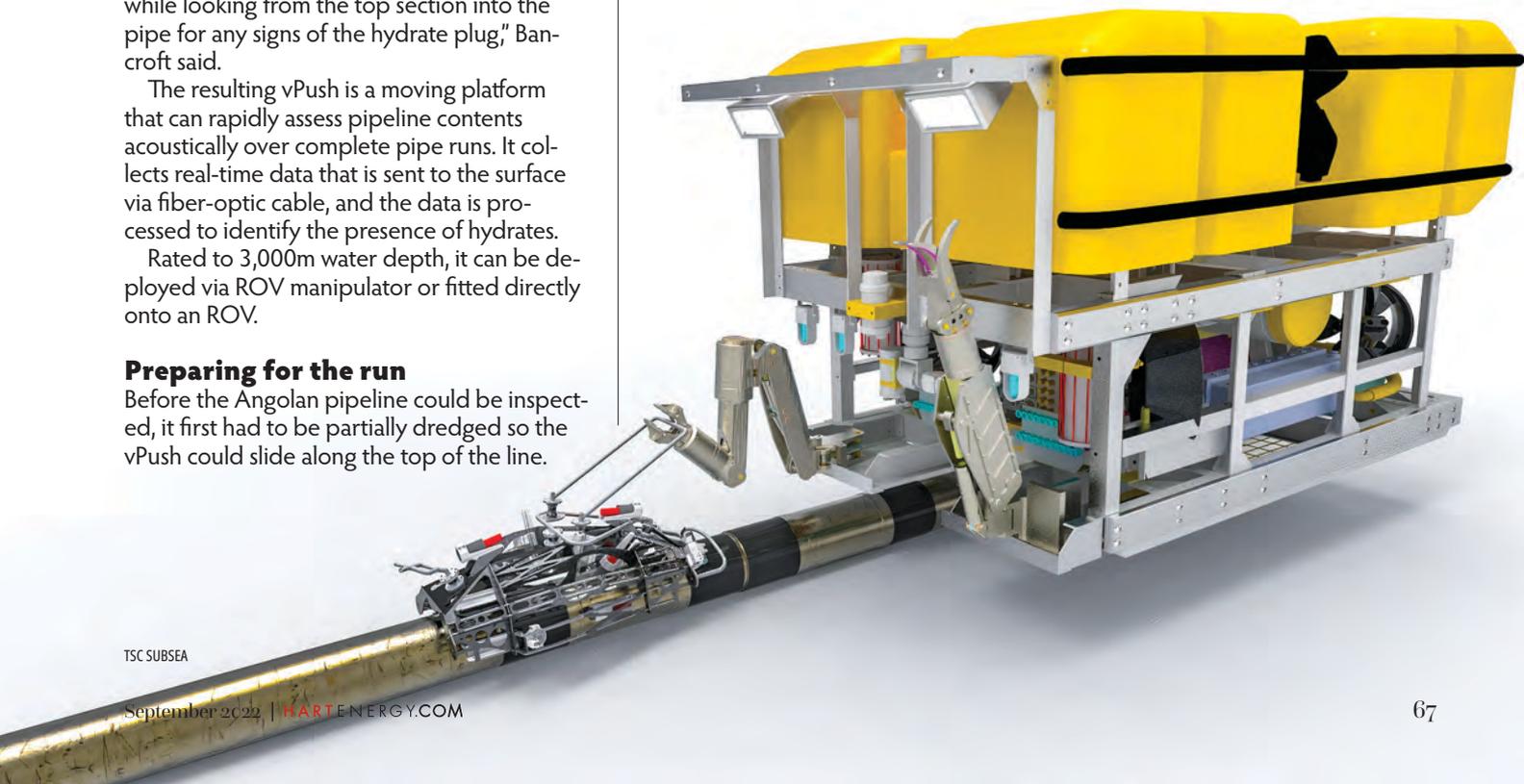
Fiber-optic transmission is necessary for that quick rate of communication, he continued.

And while the vPush kit was developed purely for the Angola job, Bancroft said, there has been a "huge amount of" interest in it, and some tenders are out. [CGI]

Watch the Wood and Xplorobot robots in action.



TSC Subsea's ART vPush rapidly assesses pipeline contents over complete pipe runs.



# THE GOOD, THE BAD, THE CLIMATE BILL

The Inflation Reduction Act may seem like a setback for the energy industry, but there are good and bad aspects for oil and gas executives to ponder.



ARTICLE BY



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**A**fter a volatile year for the energy sector, the surprise resurgence of a congressional tax and climate bill brings with it significant implications for the industry.

That development comes as the current geopolitical climate has stymied supply, consumers are experiencing significant increases at the pump, and prospects for increased U.S. production have narrowed. In April, the Bureau of Land Management issued final environmental assessments and sales notices that significantly reduced available acreage on public lands for onshore oil and gas lease sales, increased royalty rates and included a provision to examine the “social cost of carbon” for lease sales.

In addition, the U.S. Department of the Interior (DOI) released its proposed five-year National Outer Continental Shelf Oil and Gas Leasing Program (OCS) Program, which called for the removal of all prospective leases off the Atlantic and Pacific coasts. The plan, announced in July, would also limit new lease sales to one potential sale in Alaska’s Cook Inlet and 10 in the Gulf of Mexico. In contrast, the 2018 program proposed 47 lease sales across 25 of the 26 OCS planning areas. The DOI’s current proposed program even contemplates freezing new lease sales over the next five years.

However, some reprieve was given late last month when Sens. Joe Manchin (D-W.Va.) and Chuck Schumer (D-N.Y.) announced the resurrection of a tax and climate budget reconciliation bill, a deal they coined the Inflation Reduction Act (IRA).

As expected, the energy provisions within this proposal lean heavily toward credits and rebates for research, development and installation of renewable energy technologies and carbon capture projects, providing incentives to move away from fossil fuel energy consumption. While the new legislation may seem like a setback for the energy industry, there are major benefits and drawbacks for oil and gas decision makers to consider.

## The Good

- IRA tethers future offshore wind development to domestic oil and gas production, stipulating that the administration must meet a 60-million-acre threshold of offshore oil and gas leases to advance additional offshore wind leases;
- The bill ties the issuance of rights-of-way for wind or solar energy development on federal lands to onshore lease sales of 2 million acres or half of the acreage nominated;
- It reinstates lease sale 257—one of the historically largest offshore oil leases—and requires lease sales of 258, 259 and 261;
- It devotes \$150 million to the DOI, \$125 million to the Department of



**“While the current permitting reform bill framework leaves a lot of scraps on the cutting room floor, it nonetheless is a step in the right direction.”**

Energy, and \$100 million to the Federal Energy Regulatory Commission for staffing and the development of programmatic documents to facilitate timely and efficient environmental reviews; and

- The bill allocates \$70 million to the Federal Permitting Improvement Steering Council (FPISC), \$40 million to the Environmental Protection Agency, and \$20 million to the National Oceanic and Atmospheric Administration to conduct a more efficient and timely permitting approval process.

**“As expected, the energy provisions within this proposal lean heavily toward credits and rebates for research, development and installation of renewable energy technologies and carbon capture projects, providing incentives to move away from fossil fuel energy consumption.”**

#### **The Bad**

- IRA increases minimum onshore lease bids and eliminates noncompetitive leasing;
- It increases onshore and offshore royalty rates to 16.67%, and raises rental rates for leases;
- The bill reinstates the Superfund tax on oil production and imports at 16.4 cents per barrel; and
- IRA implements fees for CO<sub>2</sub> emissions from facilities greater than 25,000 metric tons annually.

It is all but certain Speaker Nancy Pelosi (D-Calif.) will be able to muscle the IRA through the House by Aug. 12.

There is a silver lining to this deal. Sens. Manchin, Schumer and Speaker Pelosi have made a subsequent handshake agreement to advance an energy permitting bill this session of Congress. While this bill exists in concept only, a framework was released which includes tangible gains in the federal permitting process. Specifically, the proposal is reported to include the following reforms:

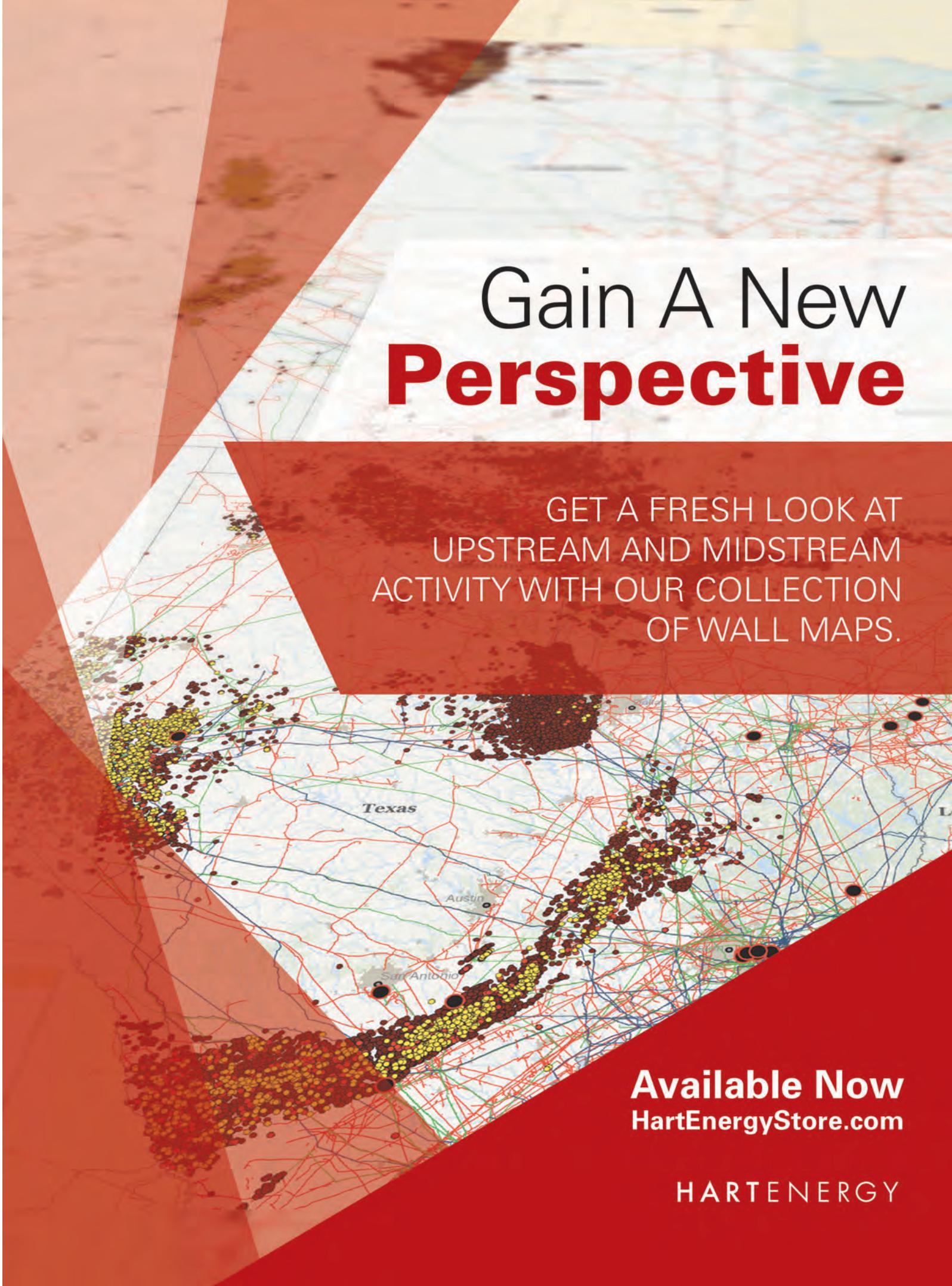
- A two-year limit for National Environmental Policy Act reviews regarding major projects and a one-year timeline for lesser projects;
- Designation of a lead federal agency to coordinate inter-agency reviews;
- Expansion of FPISC eligibility for additional energy projects;
- Establishment of a statute of limitations for litigation against permits;
- Prohibition of states and tribes from requesting withdrawal of an application under Section 401 of the Clean Water Act; and
- Legislation requiring completion of all relevant permits for the Mountain Valley Pipeline.

What the final text may look like for this energy permitting proposal is much less certain, as is its path forward in the House and Senate. While the current permitting reform bill framework leaves a lot of scraps on the cutting room floor, it nonetheless is a step in the right direction. It could serve as a bipartisan admission by Congress that meaningful permitting reform is crucial to the completion of any and all domestic energy projects. 

*William “Bill” Ball is a public affairs director with Foley & Lardner LLP. He is a member of the government and public policy practice in Washington, D.C.*

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# SOLAR OPTICS

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**H**ow to solar? First, only do it in the backyard. From the summer issue of Smithsonian magazine, it was intriguing to read of the struggle that manifested for the owner of an officially deemed historic home in northeastern Washington, D.C.

In a gesture of green-ness, the owner had placed solar panels on the rear-facing portion of the roof. Pleased with the results, he sought to place panels on the street-facing side.

His neighbors—he had lived there for more than 30 years—protested. They were protesting on his front porch.

A front-yard version of “nimby” arrived over solar. On a front porch. In Washington, D.C.

The application was denied, 5-1, by Washington’s Historic Preservation Review Board.

The home’s modification to accommodate the rear-facing panels had been permitted. But the street-facing panels were impermissible as they would “ruin the house’s historic appearance,” Smithsonian reported.

An architect on the preservation board said in the hearing that the idea of solar panels on the front of historic homes just “upsets me.”

The homeowner noted in response that the District of Columbia has legislated it will consume 100% renewable energy by 2032 and 10% of it will be locally generated solar, according to the community news site GGWash.org, which reported on the charged debate while it was underway.

Another architect on the board said all parties in the case should “step back and forget about the energy impact.” Instead, they should “just think about the color and the texture.”

Continuing, things were said about the planet dying and being on fire eventually, so historic-home preservation would be meaningless anyway. Everything will burn. But, GGWash.org summarized, speakers were worried only about what color the fire hose should be.

There was more emoji-evoking, gif-generating, meme-inspiring commentary in the “weird” genus.

Including this: The home is only 110 years old. The author’s article described it as “colonial,” but it’s only colonial in its architectural elements. It was built in 1912, according to preservation commission records.

Also, a look at the home via Google Street View brings doubt as to its “historic appearance.” There are multiple, low-hung power lines along the street as well as visible power lines connected to it and other homes.

In 1912, the White House and Capitol Hill had electricity already, according to the U.S. Energy Information Administration. The Capitol Power Plant was coal-fired.

Possibly, electrification had reached the neighborhood by the time of the home’s construction; thus, the visible power lines are age-appropriate.

The Smithsonian article moved on to discuss Americans’ reticence to take up coal in the 1800s, deeming a coal-burning stove visually unappealing in comparison with a wood-burning fireplace. “In articles and speeches, prominent citizens protested, denouncing stoves as, essentially, un-American.”

Nimby and “nimfy” battles are also found along coastlines. Smithsonian reported this spring on the long path toward placing six wind turbines within sight of New England’s Block Island. The community reluctantly traded noisy diesel generators for a visually noisy waterscape.

But “suddenly you could hear the leaves rustling, the waves breaking and the birds,” a resident said.

I discussed the solar “not in the front yard” debate with my 10-year-old nephew over a couple of Whataburgers. Citing a Forbes article that quoted a University of Idaho planetary scientist, he responded, “The moon’s going to crash into Earth in a billion years anyway.” (This is if the Earth and moon are not yet swallowed by a Red Giant Sun.)

Fair point. “But by then we should have figured out technology to keep the moon in place, though,” I said.

He replied, “Well, yeah. But only if you do it in the backyard.”

At a shop nearby, he noticed a board game: “Happy Little Dinosaurs: Smile, It’s Almost Over.” Amongst the calamities, the characters—such as Nervous Rex and Cry Ceratops—must overcome are meteors, predators, “emotional disasters” and spa days ruined by lava.

We sternly admonished each other for laughing.

Back in D.C., a win on the 6400 block of 5th Street NW was eventually found: The front-facing panels would be covered with a film that is a photographic image of the roof. The owner, Steven Preister, had been previously unfamiliar with this new and effective means of camouflage.

But, he told Smithsonian, “I never found solar panels to be ugly in the first place.”



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