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Inside This Issue…

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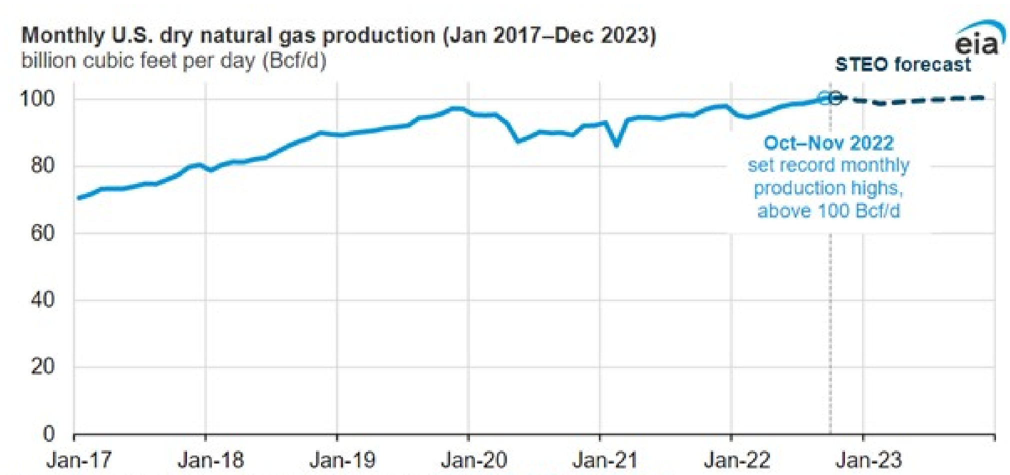
Year In Review: U.S. Oil And Natural Gas Industry Hits Record Production To Meet Rising Global Demand In 2022

With a war in Europe, economies recovering from Covid-19, and an ongoing global energy crisis, the U.S. oil and natural gas industry met the moment in 2022, increasing production to record highs to meet the demand of American consumers and businesses, as well as our allies abroad.

As 2022 comes to an end, here are a few highlights from this year:

Natural Gas Production Soars Past Pre-Covid Levels

In 2022, U.S. natural gas production climbed and then surpassed monthly records set in 2019 prior to the pandemic, averaging more than 100 billion cubic feet per day in both October and November. The rise in production was driven by the Permian and the Haynesville regions, which was made possible by recent pipeline infrastructure upgrades.



Oil Production Picks Back Up and Is Forecasted to Break Records in 2023

U.S. crude oil production is on the way to surpassing pre-Covid levels in 2023, according to the U.S. Energy Information Administration's December Short-Term Energy Outlook:

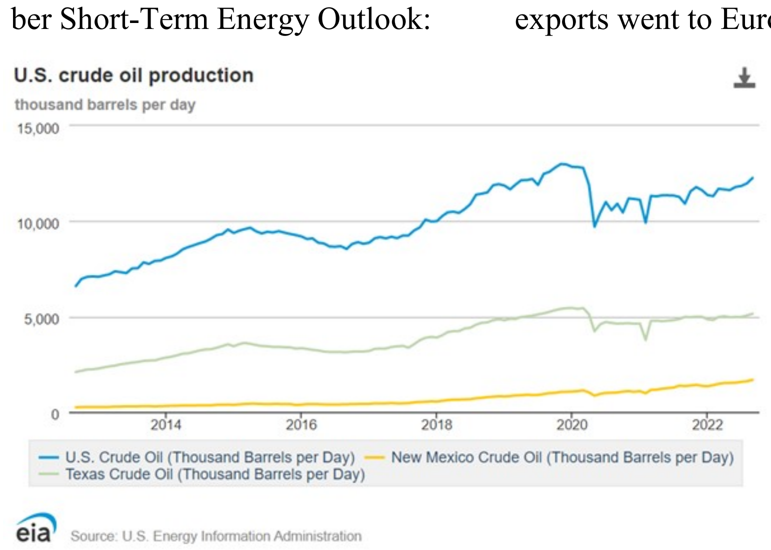
"U.S. crude oil production in our forecast averages 11.7 million (barrels per day) in 2022 and 12.4 million b/d in 2023, which would surpass the record high set in 2019."

In September production was just under 12.3 million b/d, up 12.4 percent since September 2021. Much of this was driven by the Permian Basin where New Mexico saw a 24 percent increase over 2021, hitting 1.7 million b/d in September, and Texas continued to lead the nation in oil production with 5.1 million b/d in September.

Crude oil production in the Permian Basin reached an estimated 5.5 million b/d in December, a new record, and EIA forecasts Permian production will continue rising to kick off 2023.

Record U.S. Exports Critical for Europe

Soon after Russia invaded Ukraine, President Joe Biden announced the U.S. commitment to ramp up exports of U.S. LNG to Europe to mitigate effects of the war. U.S. LNG exports to Europe increased 18 percent compared to the 2021 average, surpassing U.S. LNG exports to Asia. All told, an estimated 74 percent of U.S. LNG exports went to Europe earlier this year.



Throughout the year, as Europe searched for alternatives to Russian energy, demand for U.S. crude oil and petroleum derivatives increased

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Chevron chief blames western governments for energy crunch

Western governments have made a global oil and gas crunch worse by "doubling down" on climate policies that will make energy markets "more volatile, more unpredictable, more chaotic", the head of US supermajor Chevron has warned.

Mike Wirth, Chevron's chief executive , said a premature effort to transition from fossil fuels had resulted in "unintended consequences", including energy supply insecurity from crisis-hit Europe to California.

Despite heavy global investment in renewables in the past 20 years, fossil fuels still met about 80 percent of global demand, and governments had to hold an "honest conversation" about the scale of the energy challenge, Wirth said.

"The conversation (about energy) in the developed world for sure has skewed towards climate, taking affordability and security for granted," Wirth said in an interview at the company's headquarters in San Ramon, California.

"The reality is, (fossil fuel) is what runs the world today. It's going to run the world tomorrow and five years from now, 10 years from now, 20 years from now."

The supermajor boss's comments come as western governments' climate commitments clash with an energy crisis following Russia's invasion of Ukraine, which has sent inflation soaring and threatens to topple the world into recession.

Last week, Russia and its ally Saudi Arabia also agreed to begin cutting oil production next month, a sign that Moscow's energy war on Europe was taking on a global complexion.

But Wirth said the source of the energy crunch predated Russia's invasion and followed years of underinvestment in new oil supply. Annual capital spending on oil and gas projects was now about half the rate seen in years before the pandemic, he said, even though demand for the energy has continued to rise.

Meanwhile, spending on alternatives to oil and gas was "woefully short,

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Year in Review

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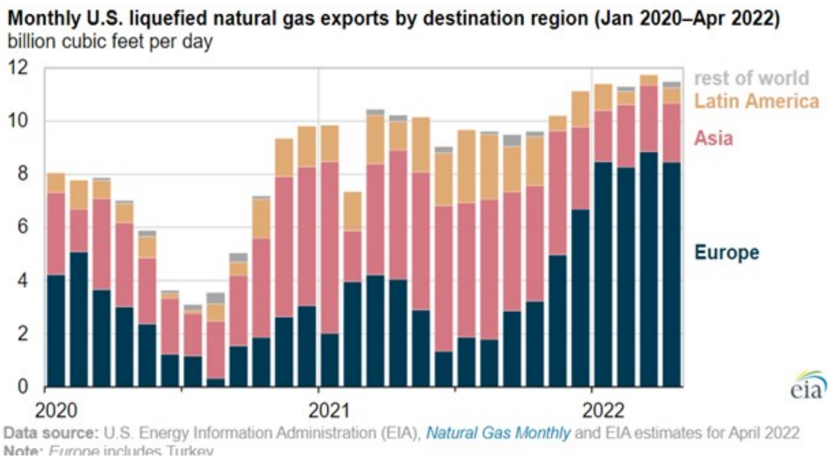
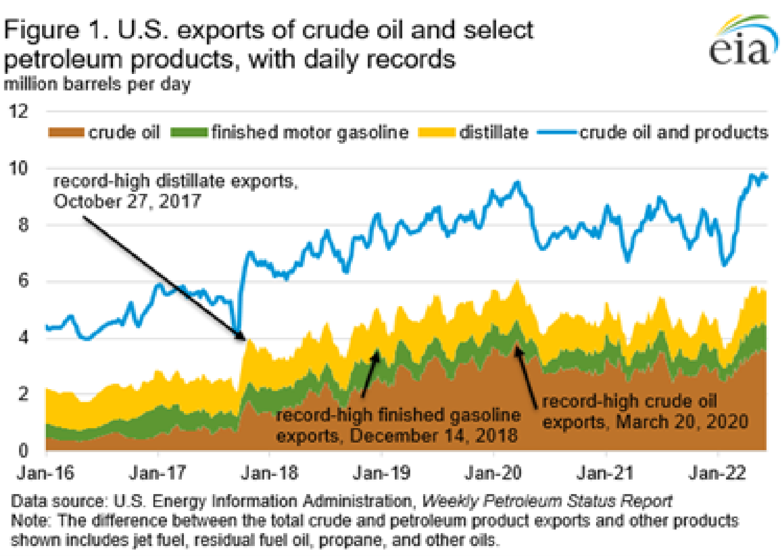


significantly, as well. According to the EIA, U.S. exports of crude oil, finished motor gasoline, and distillate have all increased since the beginning of 2022 and in May, U.S. exports of crude oil and petroleum products reached a record of 9.8 million barrels.



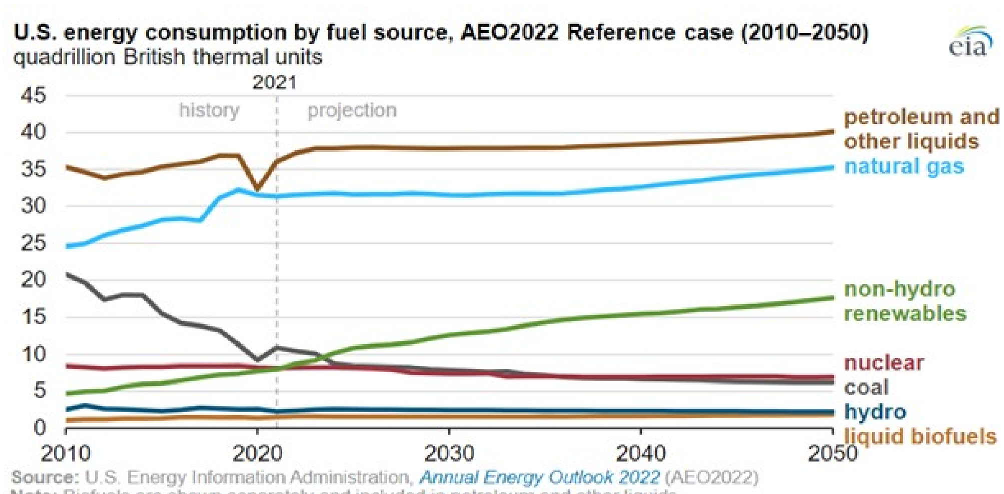
U.S. Energy Consumption Continued to Grow With Oil & Natural Gas As Top Fuels

The EIA 2022 Annual Energy Outlook forecasts that while the renewable energy market grows steadily, oil and natural gas will remain the two most-consumed energy sources in the United States, driven by increasing population growth and economic development. From EIA:

"We project that U.S. energy consumption will continue to grow through 2050 as population and economic growth outpace energy efficiency gains. Petroleum and other liquids will remain the most-consumed category of fuels through 2050 in the AEO2022 Reference case."

Oil and Natural Gas Industry Continues Commitments to Reduce Emissions

The 2022 Environmental Partnership annual report demonstrates the industry's continued commitment to deliver the world's energy while simultaneously reducing emissions from this process.



Not only have participating companies - representing 70 percent of U.S. onshore oil and natural gas companies - increased leak detection efforts, replaced equipment and reduced leak occurrence rates 0.05 percent at approximately 100,000 sites surveyed, but in 2021 these companies cut flaring intensity nearly in half.

"In 2021, there was a 40 percent increase in the number of participating companies in the flare management programs. These companies represent 62 percent and 40 percent of total U.S. oil and natural gas production, respectively. Including new company participants, **there was a 45 percent reduction in flare intensity and a 26 percent reduction in total flare volumes from the previous year."**

And this is just one example of the commitments being met by companies across the supply chain.

Bottom Line: By delivering energy security to Europe at its time of greatest need, the American oil and natural gas industry once again demonstrated that it is a vital pillar of the world's energy system. It continued setting production records this year despite the slowdowns brought on by the pandemic and other external pressures experienced over the previous two years, and is doing it cleaner than ever.

Once again 2022 proved that oil and gas is and will remain a reliable and secure energy source for many years ahead.

Chevron chief blames western governments for energy crunch

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trillions of dollars short" Wirth said.

The mismatch "illustrates the risk in moving from a system that keeps the world functioning today aggressively to another system, and shutting down nuclear, shutting down coal, discouraging oil and gas", he added.

Wirth's comments are likely to draw criticism from environmental campaigners who believe oil groups are seizing on the energy crisis to deepen dependence on fossil fuels despite the urgent threat of global warming.

Chevron is the world's second-biggest supermajor by market capitalization, after ExxonMobil, and produces almost 2 percent of the world's oil.

Wirth was among energy executives called to testify in Congress last year as part of an investigation into what lawmakers described as "Big Oil's disinformation campaign to prevent climate action".

Chevron last year announced plans to spend $10bn over seven years on low-carbon technologies, and has an "aspiration" to reduce its operational emissions to net zero by 2050, although this does not include pollution from the products it sells. Total capital spending this year would amount to $15bn, including $800mn on its low carbon business.

"The IPCC (UN climate report) concludes that anthropogenic climate change is a real thing and that the use of fossil fuels has contributed, and so we accept that," Wirth said.

But he rejected the blame attributed to oil companies for providing "a legal product that complies with all the laws", and for which there was still consumer demand - and reiterated his pledge that Chevron would continue to increase oil supply.

"If people want to stop driving, stop flying...that's a choice for society," he said. "I don't think most people want to move backwards in terms of their quality of their life...our products enable that."

The U.S. Congress recently passed sweeping new climate legislation, including $370bn worth of subsidies for clean energy, designed to accelerate an energy transition in the U.S.

But the Biden administration has also pushed for more immediate solutions

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NA Pipeline Construction Outlook

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Coast. That project, which Energy Transfer gained via its acquisition of Enable Midstream in December 2021, is backed by a 20-year agreement with the $10 billion Golden Pass LNG export plant now under construction in Texas by QatarEnergy (70 percent) and Exxon Mobil (30 percent).

Energy Transfer completed the trunk line of Gulf Run before the close of 2022 and was conduction an open season for deliveries beginning Jan. 1. Co-CEO Marshall McCrea told analysts last year that the Dallas-based company also was making progress toward potential FID for its own LNG export project at Lake Charles, Louisiana.

Quicker with intrastate

As pipeline operators look toward intrastate pipelines as the fastest path to expansion, two distinct corridors are developing for egress from the Haynesville, with pipelines from the Louisiana side aimed at LNG facilities on the Louisiana coast and proposed projects from the Texas Haynesville targeting Texas LNG exports, along with increasing Permian Volumes.

Williams announced in late June that it has reached a final investment decision (FID) to build its proposed Louisiana Energy Gateway (LEG) project to gather natural gas produced in the Haynesville. The project is set to move 1.8 Bcf/d of gas to several Gulf Coast markets, including its Transco gas pipe from Texas to the U.S. Northeast, industrial consumers and LNG export plants.

Williams said LEG, which is expected to enter service in late 2024, will enable it to pursue additional market access projects, including development of carbon capture and storage infrastructure. Kinder Morgan has said it also is evaluating a project to link the Texas Haynesville with LNG export points on the Texas side of the border.

Additional North American LNG export capacity will be added with the expected 2023 startup of the $17 billion LNG Canada Export terminal, which is currently under construction in Kitimat, British Columbia. It will have a production capacity of 14 mtpa from the first two trains, with the potential to expand to four trains.

LNG Canada, which will supply Asian markets, will get its natural gas supply via the 48-inch, 416-mile Coastal gaslink natural gas pipeline now under construction by TC Energy. It will be the first major transmission pipeline to move natural gas across the Canadian Rockies to the British Columbia coast. The pipeline was approaching 65 percent completion, as its June project update.

Canada is also looking at LNG export expansion on its east coast to expand capacity to Europe, but Environment Minister Steven Guilbeault said existing natural gas infrastructure would only be able to supply one of two proposed options: an LNG facility in New Brunswick by Spain's Repsol or in Nova Scotia by Pieridae Energy.

Guilbeault, who said the idea of constructing new gas pipelines to supply east coast export facilities is not "very realistic," told Reuters that Repsol is "probably the fastest project that could be deployed, because it requires minimal permitting," with a pipeline already in place.

In Mexico, New Fortress agreed with Comisión Federal de Electricidad (CFE) in July to increase its supply of natural gas to multiple CFE power generation facilities in Baja California Sur and the development of a new LNG hub off the Gulf of Mexico coast at Altamira, Tamaulipas with multiple FLNG units of 1.4 MTPA each,. CFE will supply natural gas via existing pipelines to two FLNG units.

Chevron chief blames western government for energy crunch

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to drive down the soaring U.S. petrol prices that have dented the president's approval ratings. Last year, Biden took aim at "potentially illegal conduct" by companies such as Chevron and ExxonMobil and clashed with Wirth this summer after telling the supermajors their record profits were "not acceptable".

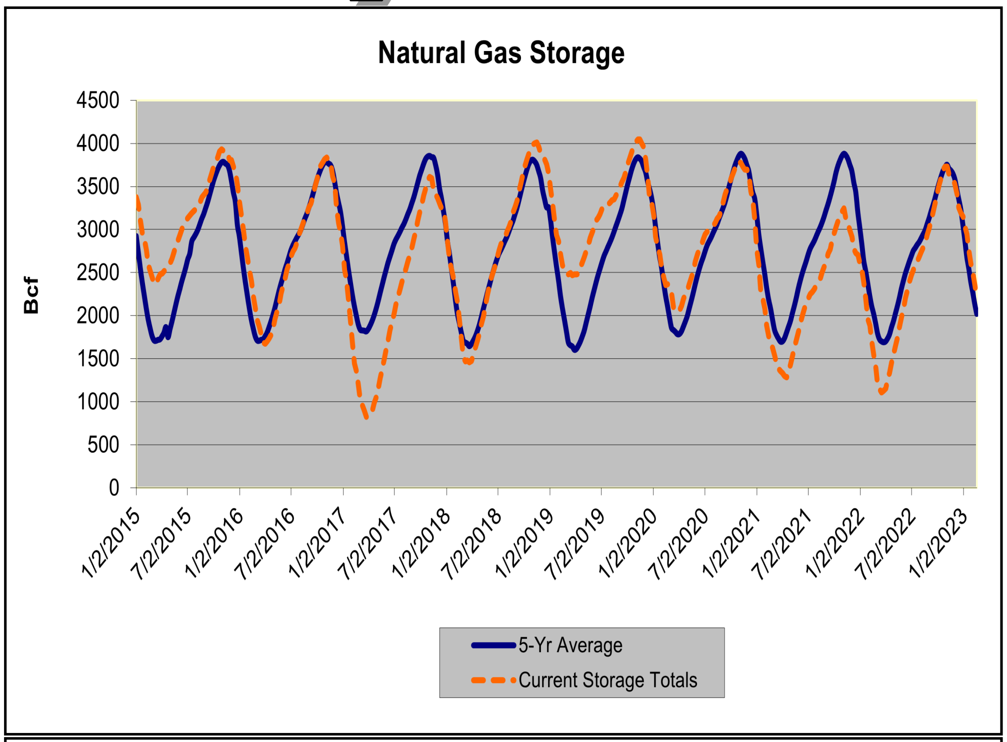
The administration has also released oil from its emergency stockpiles, loosened anti-smog rules and considered cutting fuel exports from the U.S. in a bid to shelter domestic consumers from crude price rises.

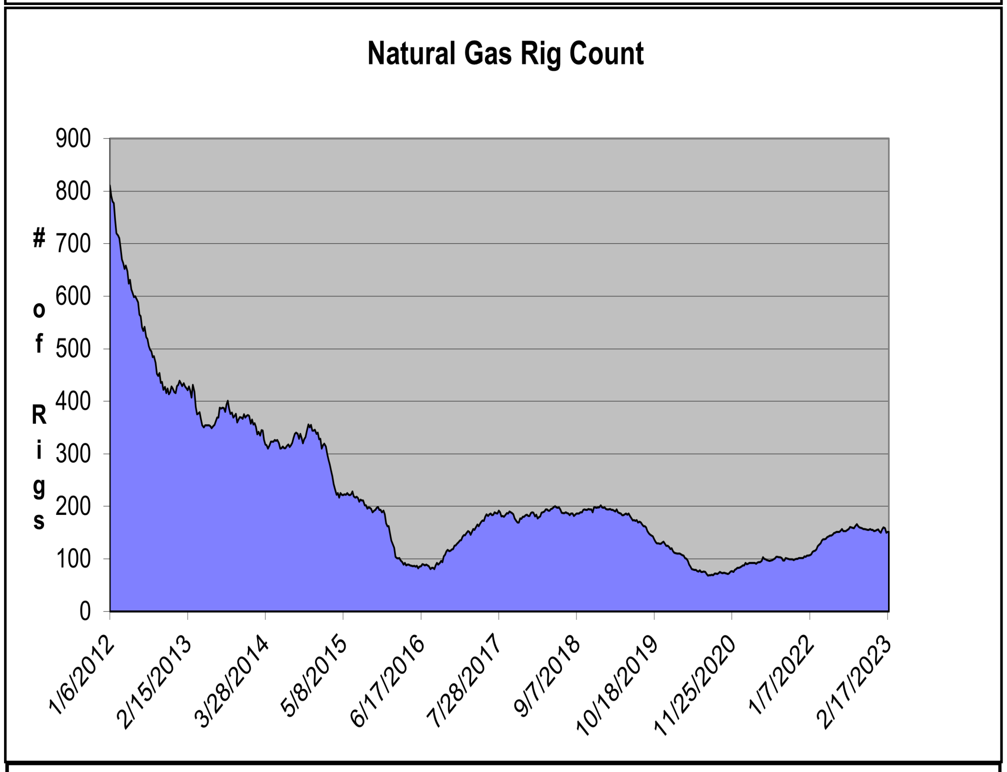
Since Russia's invasion of Ukraine, the White House has also called for U.S. shale producers, including Chevron, to increase domestic supply, although producers are increasingly eschewing pricey new drilling campaigns in favour of bumper dividends.

Wirth said this was a dilemma for an administration that had entered office with a "very clear agenda...to make it more difficult for our industry to deliver energy to our customers".
The White House's responses to the global energy crisis were now "all tactical", said Wirth.

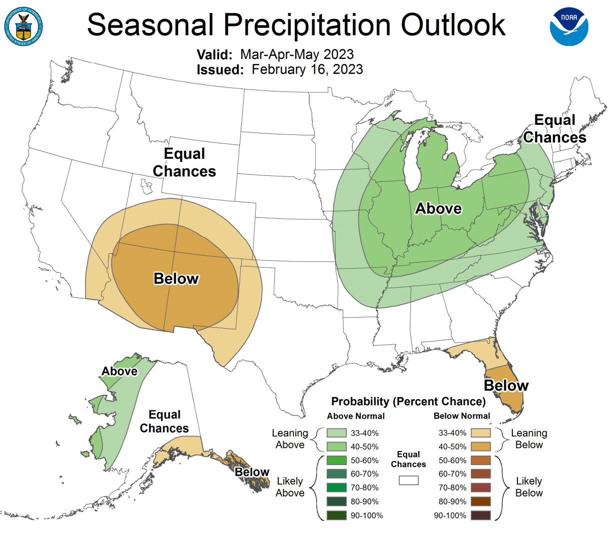
"There's not a lot of deep energy expertise in the administration...There's a point of view that you find quite visible in the administration that we can move from system A to system B very quickly and easily. And it's not that simple."

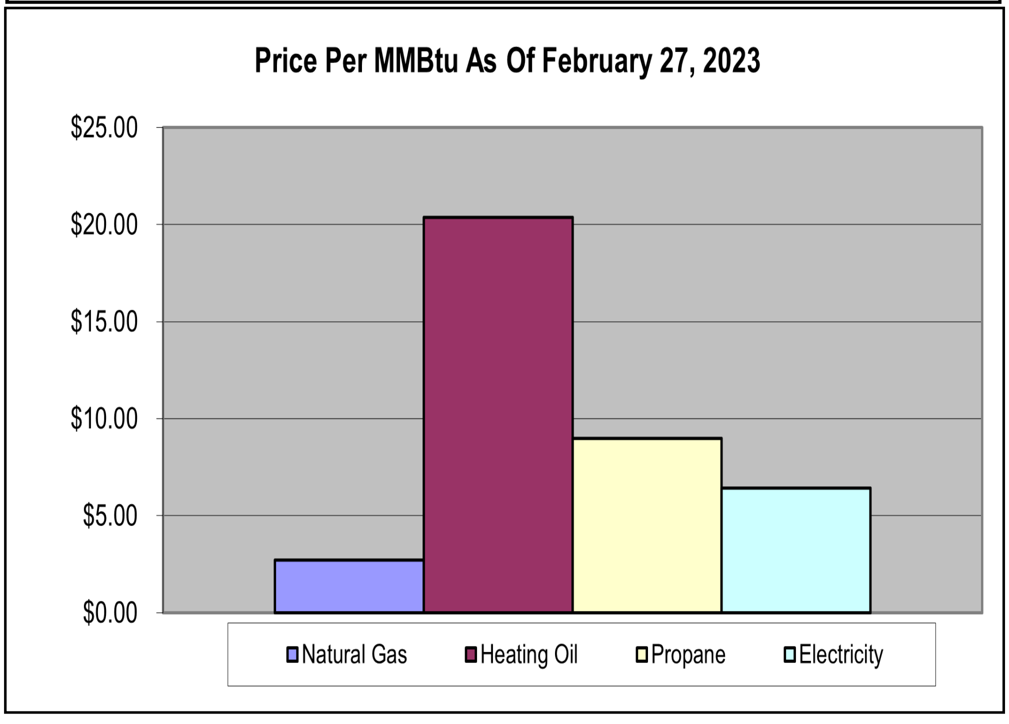
Snapshots





Seasonal Temperature Outlook
March – April – May





NA Pipeline Construction Outlook

Seldom has a new year arrived with the degree of supply and demand uncertainty facing global energy markets at the start of 2023.

Months of soaring oil and natural gas prices gave way in late 2022 as oil demand projections softened on recessionary fears and Europe's months-long buying spree filled its natural gas storage levels to near capacity. Counterintuitively, Brent prices fell further in December even as the OPEC+ cartel announced new supply cuts and Europe's ban on Russian oil imports forced Moscow to reroute supplies.

That was partly because the OPEC+ cuts turned out to be harsher on paper than in practice. The announced 2 MMbpd - roughly 2 percent of global supply - turned out to be more like 1 MMbpd, as some cartel members struggled to make quotas. The impact of European price caps on Russian oil and gas, meanwhile, remained questionable as 2022 came to a close.

While 2022's rollercoaster pricing fell into backwardation before year-end, there were enough contrarian indicators to give December's bears heartburn.

U.S. shale production, which provided most of the world's supply growth in recent years, has fallen to a snail's pace as producers react to higher costs and lower prices. A months-long selloff of U.S. strategic reserves appeared poised for reversal as pricing approached the $70/bbl level that would trigger a refill.

Indications of slowing inflation and an anticipated softening of China's demand-crushing COVID policies also support projections of tight gas supplies in 2023.

"China's COVID policy is the most important fundamental factor for global demand in commodities and energy in 2023, as its demand softness due to lockdowns in 2022 was a key safety valve for oil, gas and coal markets, while Europe scrambled to replace Russian energy," Dan Klein, head of Energy Pathways at S&P Global Commodity Insights, said in December.

"With another year of vaccinations and growing frustrations with lockdowns domestically in China," Klein said, "Restrictions will likely ease somewhat in 2023 and imports of fossil fuels can be expected to increase again."

Natural gas impacts

Activity in global pipeline construction markets is predominantly driven by natural gas, with Europe eyeing new sources to replace Russian supplies and the Asia-Pacific region continuing to expand its import, transmission and distribution infrastructure, led by India and China.

Even before 2022 and Russia's invasion of Ukraine, global energy markets were strained as demand returned faster than supply. Even if commodity supply/demand balances loosen more than expected in 2023, S&P's Klein notes that almost all markets will require "another year or more of recalibration before inventories, balances and prices return to a more sustainable equilibrium."

Moreover, despite Europe's success at building gas stocks ahead of the 2022-23 winter, that feat may prove to be more daunting in the months ahead as the continent faces a full year with scarcely a trickle of Russian gas. Planning and construction of liquefaction and regasification facilities, along with supporting natural gas pipeline infrastructure, is moving ahead, but nearly all of the new LNG supply will come online after 2023.

These trends were reflected in Underground Infrastructure/Pipeline & Gas Journal's annual analysis of pipeline construction activity, which found 114,403 miles of pipelines either planned or under construction worldwide at the start of 2023. Of those, 86 percent are natural gas projects and 14 percent are liquids pipelines. Projects still in the planning, engineering and design phases represent 75,332 miles of the total, while 39,071 miles are in various stages of construction.

The combined figures reveal a 10.7 percent increase in total mileage compared with the 113,305 miles of pipelines that were planned or under construction in our 2022 survey.

Total mileage increased in four of seven regions, including gains of more than 50 percent in both Europe and Asia-Pacific, while North America, Africa and South and Central America posted declines.

Total mileage of pipelines planned and under construction across all regions at the start of 2023 includes Africa, 15,026 (-9.9 percent); Asia-Pacific, 31,521 (+50.6 percent); Western Europe, 12,082 (+57.5 percent); Russia/CIS, 16,684 (+11.6 percent); South/Central America and Caribbean, 13,281 (-18.2 percent); North America, 18,869 (-13.8 percent); and Middle East, 6,940 (+39.2 percent).

TABLE 1.

Region	Miles Under Construction	Miles Planned	Total
North America	8,548	10,321	18,869
Western Europe/EU	4,312	7,770	12,082
Asia-Pacific/Australia	12,010	19,511	31,521
Africa	2,774	12,252	15,026
Russia and CIS	5,722	10,912	16,684
South, Central America/ Caribbean	4,429	8,852	13,281
Middle East	1,226	5,714	6,940

North America Outlook

Pipeline mileage whether under construction or set to kick off in 2023 equals 8,548 miles with another 10,321 being planned.

U.S. LNG has been a critical source of Europe's supply and is projected to meet more of the EU's natural gas demand in the future. Export capacity is currently maxed out, but more natural gas pipeline and LNG export capacity is being added through numerous projects to help meet growing international demand.

With pipeline takeaway capacity bottlenecked in the gas-rich Marcellus Shale, the Haynesville Basin of Northeast Texas and Louisiana and the Permian Basin of West Texas and New Mexico are stepping up to meet most of the surging European demand. Canada is also moving forward with natural gas pipeline and LNG export projects, but with cargoes primarily aimed at Asian markets.

Both the Haynesville and Permian can deliver natural gas to LNG facilities on the U.S. Gulf Coast via intrastate pipelines, potentially streamlining permitting and construction. As a predominantly dry gas basin, activity in the Haynesville shale has historically been limited by low natural gas prices, but its fortunes have reversed with higher prices and ever-increasing demand forecasts tied to nearby LNG plants.

Haynesville production growth has been made possible with expanded pipeline takeaway capacity, including Midcoast Energy's CJ Express pipeline, which entered service in April 2021, and Enterprise Products Partners' Gillis Lateral pipeline. The related expansion of Enterprise's Acadian Haynesville Extension also entered service in December 2021.

Those three projects added 1.3 Bcf/d of takeaway capacity from the Haynesville area, raising its total estimated takeaway capacity to 15.9 Bcf/d, according to PointLogic. That figure suggests excess takeaway capacity out of the Haynesville is at or below 900,000 Mcf/d, or about 7 percent of total capacity.

In response, Energy Transfer started construction of the 1.65 Bcf/d Gulf Run pipeline to move gas from the Louisiana Haynesville to the Gulf

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