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Americas: Oil Market Outlook 2023

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21ST CENTURY EPIC: A Look Back at 2022 Energy and a Look Forward to 2023

“Unprecedented” was an appropriate adjective for describing much of what happened in the energy space in 2022. The term was often used to describe U.S. spot and retail gas prices; spot jet fuel and diesel numbers; and European natural gas or electricity quotes, all of which moved to epic highs.

This decade is only three full years old and there have been multiple events that have triggered incredible price swings and volatility that were truly unprecedented. A potentially catastrophic railroad strike was averted thanks to Congress stepping in. Just another event in the first half of this decade.

We’ve identified four major pillars that shaped supply and pricing last year, and which promise to cast a considerable shadow in 2023. In no particular order:

1. The die was cast for strong energy numbers when most of the free world forged appropriate means of dealing with COVID-19. Various economic expansions from the pandemic-starved constriction of 2020 immediately strained low global inventories of crude oil and refined products. Hasty decisions to retire some refining assets from 2018 through 2020 set the stage for substantial challenges that haunted downstream markets in 2022, particularly in the North Atlantic.
2. Russia’s decision to invade Ukraine served notice that hydrocarbon molecules from what was once the world’s largest exporter could not be taken for granted. The initial market response anticipated heavy curtailments, and prices for many commodities soared to numbers that exceeded levels not even witnessed in the Arab Spring years of 2011-2014. The “fog of war” served to obscure actual energy flows that largely remained consistent until late autumn when European Union countries sought price caps and outright bans on Russian oil. The next pivotal calendar date comes on February 5 when the EU attempts to wean itself off refined products, smack dab in the middle of the Northern Hemisphere winter.
3. China’s struggles with COVID and insistence on a zero-COVID policy for its huge population put an unexpected lid on demand growth throughout what was a troubled 2022 for the people’s republic. Various estimates now attempt to gauge just how much additional consumption might be produced by a measured reopening. Most pundits put that reopening somewhere between late first quarter and early second quarter 2023 and believe it will be accompanied by a call for an additional 500,000 b/d to 1 million b/d of oil.
4. One can’t summarize the 2022 energy performance without acknowledging the steady deterioration of participation in paper and physical markets. A common criticism held that “oil markets were broken,” with observers accurately noting scant liquidity, plunging open interest and huge spreads between bid-and-asked numbers. Trading for trading’s sake became too dangerous thanks to levels of backwardation that rendered even the best strategies a crapshoot.

Annual Demand for Retail Gasoline				
Year	Average Daily Demand Millions b/d [EIA]	National Daily Average [OPIS]	Fuel Spending Per Day	Approximate Annual Cost
2010	8.993	\$2.782	\$1,050,778,092.00	\$383,534,003,580.00
2011	8.753	\$3.510	\$1,290,367,260.00	\$470,984,049,900.00
2012	8.682	\$3.607	\$1,315,270,908.00	\$480,073,881,420.00
2013	8.843	\$3.490	\$1,296,355,502.40	\$473,169,758,376.00
2014	8.921	\$3.343	\$1,252,561,926.00	\$457,185,102,990.00
2015	9.178	\$2.399	\$924,756,924.00	\$337,536,277,260.00
2016	9.329	\$2.123	\$831,672,886.80	\$303,560,603,682.00
2017	9.327	\$2.390	\$936,244,260.00	\$341,729,154,900.00
2018	9.329	\$2.720	\$1,065,744,960.00	\$388,996,910,400.00
2019	9.309	\$2.611	\$1,020,999,949.20	\$372,664,981,458.00
2020	8.049	\$2.179	\$736,493,158.80	\$268,820,002,962.00
2021	8.816	\$3.022	\$1,118,887,929.60	\$408,394,094,304.00
2022	8.698	\$3.962	\$1,447,308,928.80	\$528,267,759,012.00
2023**	8.789	\$3.449	\$1,273,156,962.00	\$464,702,291,130.00

**2023 forecast
Source: OPIS, EIA

As 2023 gets under way, demand is going to be in the spotlight, particularly with what has so far been a rough re-entry for China as it systematically lifts COVID restrictions. An eventual return to normal air travel is also believed to be a booster for global liquids demand.

For traditional fuels like U.S. gasoline and diesel, an argument can be made that gasoline demand is in decline, thanks not to widespread electric vehicle adoption but to increased vehicle efficiency and the sea change in behavior related to work and commuting. Demographics also play a role with an aging population. The “over-55 cohort” may drive more than their counterparts of other generations, but the tendency to drive less can’t be denied.

Diesel demand is likely to remain firm, but the early stages of 2023 may see a struggle particularly if the U.S. economy flirts with or sinks into a recession. A global economic slowdown would also have a profound impact on distillate exports that have been on very strong footing over the past two years.

A macro factor that should lay a heavy hand on oil markets is interest rates and the direction of the dollar.

Interest rates in the U.S. are expected to continue to rise but the Federal Reserve is trying to avoid what is described as a “hard landing” where the U.S. economy moves into a deep and extended recession. The Fed, however, believes it can engineer a “soft landing” where there is at worst a minimal economic contraction and at the same time tame inflation.

The question becomes how long does the Fed tighten money supply before wrestling inflation under control, and do the central bankers eventually pivot? Most of the expectations in this outlook are based on more appreciation in interest rates and at least some tempering of inflation. Energy price deflation looks to be the more likely course at least for the first seven months of 2023.

Rising interest rates often have a dampening effect on demand. Rising interest rates along with weaker demand is bringing a bit more consistent contango structure for crude oil, at least in the short term.

The Problem with Backwardation

“I want it now” or “I need it now” are the simple motives that drove global crude oil and refined product backwardation beyond levels that would have represented hyperbole in previous years. “Now” called for paying premia on a scale that were far larger than outright price points in previous years. Until 2022, backwardation was a phenomenon only discussed in commodity trading circles. Severe backwardation for diesel in spring and summer took the discussion of the pricing structure to marketers across downstream pipeline markets.

Consider for a moment the initial price structure seen for California blendstock as September turned into October. Low inventories and downtime at perhaps half of the Golden State refineries brought price quotes that were as much as \$2.60/gal above CME RBOB futures. Prices for physical CARBOB some 30 days hence were more than \$2/gal lower. This lopsided market saw eventual regulatory relief that tamed backwardation, but not before retail prices in the state stormed back to \$6.30/gal.

Earlier in the year, record backwardation wreaked havoc in Northeastern jet fuel and diesel markets. In normal times, bids for products tend to rise in increments of one-hundredths or one-tenths of a cent. Last spring saw bids escalate higher in increments of 25cts/gal or even 50cts/gal on some wildly spirited expiration days. There were sessions where the price of a 1,000-barrel parcel of fuel was \$50,000 or even \$100,000 cheaper just 30 days removed from the current moment.

The steep backwardation was substantial enough to limit normal trade flows in portions of 2022. A company looking to send 25,000 barrels of diesel up the Colonial Pipeline might contend with a \$4/gal prompt price, but risk sending product to a market that could slide 50cts/gal or more while the fuel was in transit. The risk of the price deterioration attendant with such a shipment motivated hand-to-mouth volume management among a large segment of the business.

The good news for those seeking more orderly markets is that backwardation lessened greatly as 2022 ended and 2023 began. Crude oil prices for benchmark contracts 12 months from now are a more modest \$1-\$2/bbl below current values. RBOB futures see less than 18cts/gal backwardation in the same period while diesel commands a still

High and Low Spot Gasoline Price and Differential

Market/Key Product	High Diff	Low Diff	Hi/Lo Diff	High Price	Low Price	Hi/Lo Diff	Hi/Lo Dates Diffs	Hi/Lo Dates Price
New York Harbor RBOB	43	-22.5	65.5	440.02	204.66	235.36	Hi 11/3 Lo 4/8	Hi 6/9 Lo 12/8
Gulf Coast CBOB	8.5	-46.5	55	399.12	186.99	212.14	Hi 10/4 Lo 7/25	Hi 6/9 Lo 12/9
Chicago RBOB	1	-40.25	41.25	470.1	179.23	290.87	Hi 9/30 Lo 2/17	Hi 6/3 Lo 12/16
Group 3 Sub-Octane	60	-60	120	418.5	179.66	238.84	Hi 9/30 Lo 7/27	Hi 6/3 Lo 12/16
Los Angeles CARBOB	245	-24.5	269.5	491.17	196.91	294.26	Hi 9/29 Lo 11/22	Hi 9/28 Lo 12/6
San Francisco CARBOB	245	-40	285	491.17	184.44	306.73	Hi 9/26 Lo 12/14	Hi 6/9 Lo 1/3
Pacific Northwest Sub-Octane	185	-27.5	212.5	449.22	187.41	261.81	Hi 9/23 Lo 12/6	Hi 6/22 Lo 12/7
NYMEX RBOB Futures Settlement				427.62	204.91	222.71		Hi 6/9 Lo 12/8

**Prices and diffs are in cts/gal
Source: OPIS, EIA*

substantial premium of more than 50cts/gal for product “now” as opposed to 12 months from now.

A simplistic way to look at commodity markets is that backwardation tends to reflect short supply and a compelling current need while contango is indicative of comfortable inventory levels. The U.S. last saw severe contango in 2020 when WTI briefly traded at a negative number.

Investment in oil futures tends to be rewarded in backwardated markets. Consider the fate of a passive investment in WTI futures in early 2022. A fund holding 125 CME WTI contracts at \$80/bbl might see the position increased to more than 127 contracts if the holdings are rolled against the backdrop of \$1.50/bbl monthly backwardation. Positive “rolls” in 2022 were one reason why commodity funds performed so admirably.

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Without a Participation Return, Markets Will Stay Volatile

In addition to the severe backwardation, heavy moves both up and down in futures markets during 2022 were tied to a lack of market participation.

The lack of activity was glaringly noticeable in both the volume and open interest categories published each business day by the exchanges. What was also noticeable was low weekly figures amongst the funds in the Commodity Futures Trading Commission data.

When volumes are limited and open interest is compressed, futures’ prices tend to go through incredible price swings on a daily and sometimes hourly basis. Look no further than the RBOB contract. During 2021, the average difference between the high and low trades was about 5.5cts. During 2022, that average was close to 14cts.

On 33 separate occasions more than 20cts separated the high and low trade, a difficult environment to manage hedging.

Volumes also were appreciably lighter during 2022. In 2021, WTI total volumes averaged more than 985,000 contracts per day. In 2022 average daily WTI volumes were just over 820,000 lots. While that may not look like enough to influence prices, it reflected a decline of more than 15%.

Here’s a statistic that puts the 2022 light trading environment in perspective: During 2021 there were more than 100 sessions where WTI volume topped 1 million contracts. In 2022 there was about half that. The year got off to a solid start for volumes but once the Russian invasion of Ukraine took place in late February the high-volume days became few and far between.

Open interest also suffered. Not long ago, there was a total approaching 5 million contracts for combined open interest in the three main CME petroleum contracts and the ICE Brent contract. More recently, total open interest flirted with eight-year lows.

Another symptom of the extreme volatility came as exchanges sought higher margin requirements from traders to participate. The higher margins protect the exchange and those that use it from companies that might be on the wrong side of a wild move, in effect making sure that both sides of a transaction are whole.

High margin requirements were particularly astonishing for ULSD last spring where the margin for one ULSD contract amounted to close to \$20,000. For smaller players, high margins can tie up credit lines, making it even more difficult to participate in the market.

A return to more normal volumes would go a long way toward bringing more modest intraday price movements to the market and give market participants a bit more confidence that posted margins are not wiped out in a matter of a couple of hours.

Strategic Petroleum Reserve Sales

No element in the 2022 global market brought more controversy than sales of crude oil out of the U.S. Strategic Petroleum Reserves. Under the direction of the Biden Administration, the U.S. Department of Energy authorized the sale of some 180 million barrels of crude oil from storage in underground salt domes from April into December. The effort was promoted by the White House as a means of dealing with global supply disruptions triggered by Russia’s invasion of Ukraine.

The sales were roundly criticized by conservative groups as well as industry voices with the common complaint that the Biden Administration was playing politics with energy security.

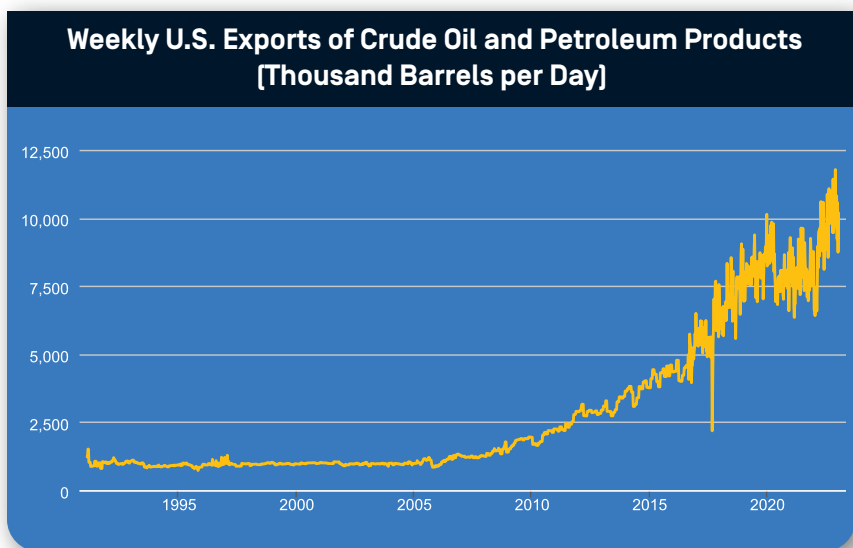
October saw further sales commitments outlined but also brought word that the government would attempt to refill the strategic petroleum reserve, provided prices fell to approximately \$67-\$72/bbl. On December 16, the Department of Energy served notice that it would purchase 3 million barrels of sour crude for SPR coffers in February.

The amount of the solicitation was meager but the notice was viewed as a reminder that the Administration was indeed committed to replenishing SPR tanks, in effect providing a pricing backstop for domestic producers who might fear a repeat of the 2020 freefall in crude that splayed red ink on most shale oil operations.

2022 began with approximately 593.4 million barrels of crude in SPR storage. It concluded with approximately 373.4 million bbl, reflecting a decline of nearly 215 million barrels of crude. [Someeazs Congressionally authorized sales boosted the sales total and will continue in 2023] The stock level reflects the lowest number since the end of 1983 when 378.3 million barrels were in government salt domes.

Partisans can look at the SPR totals and find statistics to support various claims. Critics of the sales might note that against the backdrop of refinery needs of say 17 million b/d, the days’ supply level fell from nearly 35 days to just over 22 days thanks to the drawdowns.

Advocates of the policy might counter by citing U.S. production capability of 12.1 million b/d at year’s end and combine it with the Canadian contribution of approximately 3.9 million b/d. Measured against that North American production capability, one could claim that the current SPR provides all but perhaps 1 million b/d of foreign oil, or more than 378 days of supply.



Source: U.S. Energy Information Administration

Much of the criticism of SPR policy did not involve energy security but warned of setting precedents based on political expediency. The Biden Administration did trumpet the connection between SPR sales and U.S. gasoline prices on several instances, claiming at one point in the summer that the sales had pushed pump prices down by at least 40cts/gal.

While the polemics raged, U.S. companies collectively distributed crude and refined products around the world on a scale never before observed. Late in November, U.S. companies moved nearly 82.5 million barrels of crude and products offshore in a single week. The millennium began with

TEN PREDICTIONS FOR 2023

A Look at an Oil-Soaked 2023 Crystal Ball



1 U.S. gasoline prices will again command the consumer stage but for different reasons than in 2022. A majority of U.S. retail numbers will commence 2023 below \$3/gal and beyond a seasonal higher priced interval and those numbers may disappear by spring only to return later in the year. Diversity in state-by-state numbers will continue with perhaps \$1.50/gal separating the lowest and highest priced states.

2 The 2022 OPIS/AAA average price for gasoline was within a fraction of \$3.97/gal. A reasonable projection for 2023 calls for \$3.39/gal to \$3.49/gal. Relatively higher prices in western states and the Northeast will offset many of the sub-\$3/gal prices in the Southeast, Midwest and along the Gulf Coast and in the Southwest. The gasoline “cut” for U.S. refiners will continue to be subordinate to diesel and jet fuel returns for most of the coming year.

3 Whereas 2022 U.S. average gas prices varied from about \$3.099/gal to just over \$5.015/gal, the fluctuations in 2023 will be much tighter. California will march to the tune of its own drum, with prices racing to \$5-\$6/gal levels during episodes of refinery downtime or other intervals of tight supply. Most lower 48 states will see availability of sub-\$3/gal gasoline in various portions of 2023.

4 U.S. gasoline consumption in 2022 looks to be about 8.7 million to 8.8 million b/d when final numbers are rendered, or about 600,000 b/d below the ~9.3 million b/d figures that were the norm from 2016-2019. Cheaper prices are not likely to alter new commuting habits, and better mileage standards will keep consumption flat to 2022. So, OPIS expects annual demand of about 8.8 million b/d or about 365 million gallons per diem to continue. That projection takes into consideration a shallow recession or some lower employment numbers in the U.S. in the second half of the year.

5 Thanks to the 2022 legacy, some dramatic price comparisons are likely. We suspect that between the middle of the first quarter of 2023 and the end of the second quarter, U.S. gasoline prices may be \$1.50/gal or 30% below same week 2022 figures. This may present some of the most spectacular deflation across the commodity space.

6 Diesel price strength will abate but diesel will continue to be considerably more expensive than gasoline, thanks to fuel switching (diesel for some purposes instead of natural gas in Europe and SE Asia) and low inventories. However, the anniversary of the Ukraine Invasion and paroxysms in 2022 diesel prices should bring deflation for this product as well. U.S. diesel prices peaked at \$5.8159/gal in mid-June 2022 and much of 2023 should see diesel about \$1.50/gal lower.

7 The 2022 average price for WTI came in around \$94.50/bbl. We suspect that 2023 will see a price only slightly below this number with \$90/bbl a reasonable prophecy for a 2023 annual average, with Brent commanding \$95-\$96/bbl. Precisely how high these numbers move above the average will depend on the successful reopening of China and the ability of western countries to avoid a significant recession. The lowest numbers for crude are most likely to be recorded in January and February.

8 Talk of global refining shortages will ease and perhaps abate by the second half of 2023. Huge new refining complexes in Africa, Southeast Asia, and the Middle East will restore comfort in the ability to create enough gasoline, diesel and jet fuel in international markets. With the notable exception of the lame duck Lyondell refinery in Houston (scheduled to close in late 2023) all U.S. refineries should survive and even prosper. Refiners should see consistent domestic demand, some further growth in export activity, and a substantial advantage versus much of the world that comes thanks to much cheaper natural gas, electric, and hydrogen costs.

9 A real test for diesel and jet fuel arrives early in 2023 via the EU ban on Russian imports of diesel, jet fuel and gasoline. It will not be easy for European countries to be weaned from Russian dependency, particularly if Mother Nature brings cold temperatures in the Northern Hemisphere. U.S. futures' markets might have a very dynamic first quarter since the Phillips 66 Bayway refinery — perhaps the most critical plant for CME futures' delivery — goes down for 60 days in February and March.

10 Retail gasoline will continue to be a hot sector in 2023 although margins may slip from the off-the-charts' levels of 2022. At least three major oil companies — BP, Shell and Motiva (owned by Aramco) — will pursue joint ventures or outright purchases of North American chain retailers. Brisk M&A activity will persist, although transaction multiples may dip with rack-to-retail margins.

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Price history goes back to 1980 for spot pricing data for gasoline, diesel and NGLs and 1995 for wholesale rack pricing for gasoline and diesel. Timing parameters can be daily, weekly (Monday – Saturday), monthly, quarterly or yearly.

weekly exports of only about 7 million barrels per week and indeed as recently as 2015, the weekly departures fell under 30 million barrels.

Whether one was an advocate or a critic of SPR sales, the numbers suggest that the distribution had a major impact on pricing of crude oil benchmarks. WTI's highest settlement in 2022 was \$115.68, which fell about \$30 short of the all-time high trades rendered in 2008. Brent's highest value was \$127.98, compared to a 2008 top of \$146.08. Pretty much every refined product from asphalt at the bottom of the barrel to premium gasoline at the top of the distribution tower hit numbers never before approached in a wild spring and summer rally.

Refining 2023: How Much Excess Can a Market Give Up in One Year?

The previous twenty years evoked the occasional references to triple digit crude. Those prices were regularly exceeded in 2008 and revisited in the 2011-2014 period when much of the world's crude oil capacity was idled by violence. Markets did of course see crude oil benchmarks briefly surpass \$100/bbl in 2022 but the more eye-opening accomplishment came when U.S. refiners occasionally collected margins in excess of \$100/bbl for some refined products.

The extent to which refined products' margins visited rarified air in 2022 clouds the future for public and private processors. Consultants are hard pressed to gauge what might be "normal" in the 2023 environment. Most analysts believe that refining margins will be winnowed from 2022 levels but assessing what might be a "mid-cycle return" is subject to great debate, particularly for the middle of the barrel.

Consider the performance of spring 2022 jet fuel in New York Harbor. Prices for the aviation fuel mirrored Boeing aircraft with OPIS confirming transactions last April at \$7.27/gal, \$7.37/gal and even \$7.67/gal. Converted to dollars per barrel, the numbers amounted to insanely high prices in the \$305-\$322/bbl stratosphere. Occasionally, refiners in PADD 1 collected more than \$200/bbl in profit for their jet fuel output.

Notwithstanding the performance of jet fuel, the engine of U.S. refinery profits in 2022 was clearly diesel fuel. The lowest global inventory figures in forty years provided a compelling backdrop and the threat of diminished supplies out of Russia kept diesel margins at levels typically four or five times what would pass for normal in preceding years.

The 2022 world burdened diesel producers, marketers and end-users with additional learning requirements. A trader holding a position in diesel needed to keep one eye on European electricity and another eye on U.S. soybean oil numbers on many days. The former saw massive substitution of diesel for natural gas when the latter reached a late August price zenith of \$590/bbl equivalent. As renewable diesel transitioned from a novel fuel to a West Coast mainstay, the industry had to familiarize itself with soybean oil economics, and fast-changing regulatory givebacks that included RINs, the Blenders' Tax Credit, and Low Carbon Fuel Standard credits. The BOHO spreads (comparing the legacy heating oil contract with bean oil settlements) moved from a few market specialists and approached the mainstream.

Gasoline and its offspring — RBOB, CBOB, CARBOB and sub-octane blends — had a briefer stay as the rainmaker for U.S. refiners. Returns for these blends were quite impressive in the second quarter but eroded in autumn to where margins were unremarkable in most of the U.S. refining centers.

Retail prices for gasoline, and the impact of motor fuel on inflation, were top-of-mind issues through spring and summer. A sharp first half 2022 rise in gasoline prices culminated with an all-time high of \$5.016/gal on June 14, 2022. The national average spent only seven days above \$5/gal but that stay proved long enough to provoke a demand destruction tailspin just as the summer driving season got underway.

Thanks to the record highs, the average daily fuel spend in the U.S. flirted with \$2/billion per diem in June. When measured over all 365 days, the motor fuel spend in 2022 was about \$514 billion, smashing all previous records for annual costs.

The impact that high fuel prices had on American consumers was stunning.

Global banks posited that U.S. motor fuel prices might have to exceed \$6/gal in order to foment the demand destruction necessary to balance supply and demand. Such pronouncements turned out to be folly. U.S. motorists drastically cut back their purchases to where the July 2022 demand number of 8.75 million b/d represented the lowest midsummer consumption number [excepting the 2020 COVID year] since 2000. Gasoline prices ultimately moved through a streak just inside of 100 days of consistent declines.

2023 gets under way with U.S. retail prices of about \$3.10/gal, a number about \$1.91/gal below the 2022 peak and about 87cts/gal beneath the 2022 average.

It's doubtful whether countrywide averages will approach the heights seen last spring and summer, but some regions may lift well before the advent of spring weather. California, for example, saw some late fall maintenance deferred until January 2023 and some pipelines will transition to summer blend specifications in early February.

Most of the data points and much of the energy scholarship points to less of a "crunch" for global refinery operations in 2023. Barring multi-month delays, which did push back some commissioning dates in 2022, the world should be much better off with refining capacity by the second half of 2023.

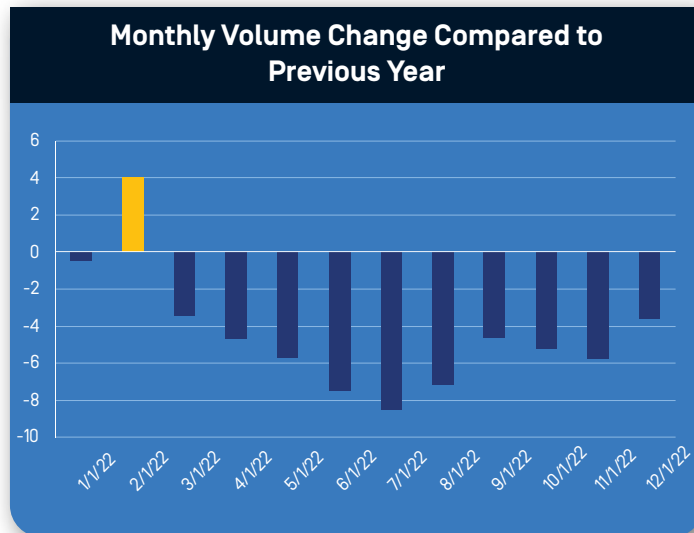
The U.S. will see the largest expansion of a U.S. refinery in a decade. ExxonMobil's Beaumont Light Atmospheric Distillation Expansion [known by the acronym BLADE] will add 250,000 b/d of capacity at the facility sometime in the first quarter of 2023. That quarter should also see the rebirth of Wisconsin's only oil refinery with Cenovus scheduled to restart the 50,000 b/d Superior, WI, refinery that was knocked out by an explosion and fire in April 2018.

Valero is also adding a little over 100,000 b/d at the Port Arthur refinery. Capacity increases on the Gulf Coast will also be able to make up for the planned shutdown of Lyondell's 268,000 b/d Houston refinery at the end of 2023.

The rest of the capacity additions in late 2022 and 2023-2025 will largely be taking place in the Middle East and Asia. A massive refinery in Nigeria was expected to start in 2022 but has run into delays. The Dangote Group is expected to start the huge 650,000 b/d refinery in 2023.

The Middle East and Asia stand out with the most aggressive refining growth. Between 2022-2025 nearly 2.6 million b/d of refining capacity has either started or is expected to come online with China and India accounting for more than 90% of that increase.

A little bit closer to home is Mexico completing the Dos Bocas refinery, which has had a ceremonial opening in 2022, but is not yet 100% completed with full capacity reached in the middle of the year. A brand-new refinery as well as upgrades to cokers at two other refineries in Mexico have a stated goal of becoming self-sufficient.



Though Mexico has invested quite a bit into building a new refinery as well as additional capacity, state run Pemex does not exactly have the greatest track record when it comes to maintaining its refineries.



Gross Gasoline Margins Strong Once Again; Is 30cts the new 20cts?

It was not that long ago that 20cts was considered a decent retail margin even though marketers complained that it reduced net profits to just a few pennies above break-even.

That level of margin comfort zone over the couple of years has moved up to about 30cts/gal in the U.S. In fact, when margins get down to about 20cts they look downright poor as marketers and retailers are grappling with higher labor costs, swipe fees and general inflationary pressures.

Wild price swings certainly helped margins and retail gasoline prices that reacted slowly to downward tugs from falling rack prices kept the margin environment on solid footing throughout the year.

The slow-moving retail price may have also been a function of weakening demand, implying that some smaller stations took longer to clear out higher priced fuel. It should also be stressed that 2022 saw far more widespread usage of pricing software designed to

“optimize” retail pricing. What really separated 2022 from most years, however, was the performance in the driving season. Essentially, every day of meteorological summer saw a price decline in the national average measured by OPIS/AAA.

It was not uncommon during the most recent year to see gross margins in some portions of the U.S. move close to \$1/gal and stay at elevated rates for several days in a row.

Multiple states saw margins top \$1/gal during various times of the year and remain in the rarified air. The West represented the standard hot spot for strong margins, but even the Rockies, Great Lakes and Northeast saw extended periods where margins were outright eye-popping.

The Southeast and Plains states trailed the rest of the country, but even the oft-challenged Southeast saw returns that were about 10cts/gal above previous years.

A sharp drop in the 3rd quarter led to record margins for that calendar segment, OPIS data shows. The 3rd quarter saw an average gross rack-to-retail margin of 54.7cts/gal. The 4th quarter got off to a slow start but by the end of the year the average margin was in the same stratosphere as the 3rd quarter at 50.2cts/gal.

Since 2014, the average quarterly margin stands at a little more than 26cts/gal, thanks to recent margin strength and a few outliers in 2014, 2018 and 2020. While a revision to the mean is not expected to be the case in 2023, margins should be biased lower on average over the course of this year.

Diesel Supply Concerns Not Going Away

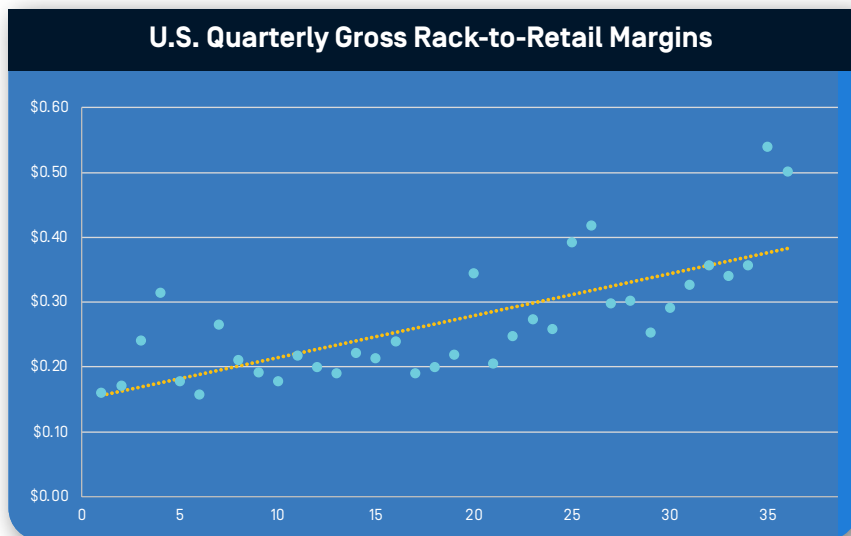
It's not often that diesel grabs mainstream media headlines, particularly in years that see wildly fluctuating gasoline numbers.

Diesel became a kitchen table topic in the fall when uninformed television hosts claimed the U.S. would run out of diesel in 25 days. While the statements were rooted in actual days' supply figures from EIA, the leap in logic ignored U.S. production and imports of the fuel. Supplies were uncomfortably tight and one can envision occasional challenges for the fuel in 2023. U.S. supplies of distillate continue to suggest a deficit to the five-year average with the critical East Coast seeing the tightest regional supply.

The trip from comfortable to compromised supply did not occur overnight.

Factors leading to the crunch go back to the pandemic. In the mainstream pandemic year of 2020, distillate demand was off by a little more than 300,000 b/d, about 8% lower than 2019, the period these days described as the "last normal year."

The dog that didn't bark in 2020 was the International Maritime Organization's requirement for very low sulfur standards on marine fuel. Pandemic-era marine shipments were crimped but when recovery ensued, the reduction in sulfur pulled plenty of barrels from the distillate pool and thinned out land-based diesel supplies.



Quarterly average U.S. rack-to-retail margin from Q12014 - Q32022 (to date)
 Each dot represents a quarter (in chronological order the 1st dot is Q1 2014 for example), while the line is a linear regression that gives an idea of where margins may be trending.
 The average margin from Q12014-Q42022 was 26.94cts/gal...the standard deviation that measures the variability from the average is 9.2cts

High and Low Spot Gasoline Price and Differential

Market/Key Product	High Diff	Low Diff	Hi/Lo Diff	High Price	Low Price	Hi/Lo Diff	Hi/Lo Dates Diffs	Hi/Lo Dates Price
New York Harbor ULSD	1.4	-3	4.4	539.54	236.49	303.05	Hi 5/11 Lo 12/7	Hi 4/28 Lo 1/3
Gulf Coast ULSD	38.25	-38.25	76.5	455.25	230.39	224.86	Hi 4/26 Lo 11/22	Hi 6/16 Lo 1/3
Chicago ULSD	40	-62	102	473.13	224.74	248.39	Hi 11/10 Lo 12/20	Hi 6/16/5 Lo 1/3
Group 3 ULSD	52.5	-72	124.5	454.19	227.74	226.45	Hi 7/2 Lo 10/28	Hi 4/28 Lo 1/3
Los Angeles CARB Diesel	53.5	-50	103.5	460.03	242.05	217.98	Hi 9/30 Lo 10/19	Hi 6/3 Lo 12/7
San Francisco CARB Diesel	50.5	-52	102.5	474.37	239.24	235.13	Hi 5/26 Lo 10/20	Hi 6/9 Lo 1/3
Pacific Northwest ULSD	85.5	-39	124.5	524.96	240.05	284.91	Hi 6/21 Lo 12/6	Hi 6/22 Lo 12/7
NYMEX ULSD Futures Settlement				513.34	235.75	277.59		Hi 4/28 Lo 1/3

* Prices and diffs are in cts/gal
 Source: OPIS, EIA

IMO had an appreciable impact on the U.S. East Coast, where supplies were strapped by the explosion and subsequent closure of the Philadelphia Energy Solutions' refinery on the summer solstice of 2019. The loss of that plant, believed to supply as much as 30-35% of the Northeast's distillate need has haunted all months of the present decade.

The large gap in supplies left by the PES refinery meant more reliance on the Colonial Pipeline and Gulf Coast source barrels. The East Coast and U.S. is not necessarily a large importer of diesel and one of the main areas that imports did come from, Russia, were cut off in 2022.

Diesel may occasionally be the most compromised portion of the refined barrel in 2023 and indeed there are already worries about Atlantic Basin supplies for the 2023-2024 winter.

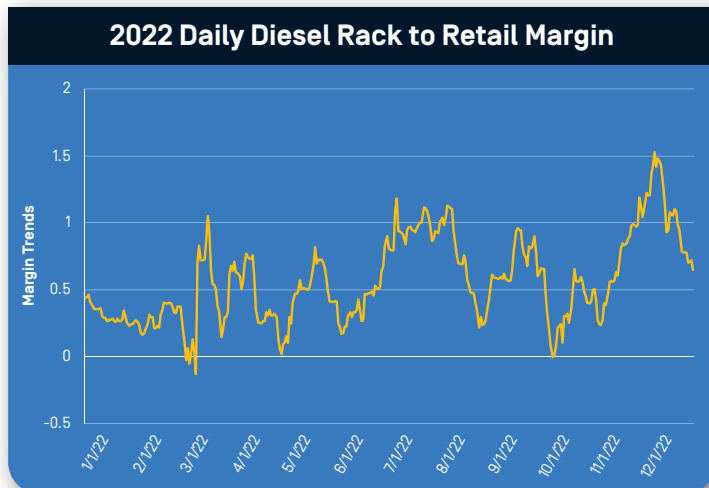
With what appears to be another year where supplies are tight, refiners should be motivated to make as much diesel as possible. ULSD futures averaged more than \$54/bbl above WTI futures in 2022 and at times hit triple digits [as did several downstream markets multiple times in 2022]. Diesel margins that top \$50 above WTI or Brent may not be often repeated this year, but margins are still expected to be solid.

Diesel is probably the molecule most responsive to economic growth, but it can suffer more than gasoline or diesel when there are recessionary complications. If 2023 indeed does bring the feared recession, diesel demand may take more lumps than other hydrocarbons.

The performance in 2022 was stunning by any measurement. During 2022, ULSD futures reached a high tick of almost \$5.559/gal in April on the day May futures were expiring. With tight supplies anticipated through most of 2023, high-priced futures in the \$4.50-\$5.00/gal range cannot be ruled out. Expiration days will continue to be highly volatile.

While street prices for diesel surpassed \$6/gal in several states, the year delivered margins that were far higher than anything modeled for diesel marketers. For about 40 days in 2022, the gross rack-to-retail margin for diesel averaged more than \$1/gal.

The amplitude of the year was staggering. More than \$2/gal separated the low and high national average price compiled by OPIS.



About OPIS, A Dow Jones Company

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