

The Diesel Forecast

Two Wars, Three Scenarios, and a \$2 Spread by Spring

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U.S. retail diesel averaged \$6.285 per gallon in the week of September 14, up 31.8 cents in a single week and the highest nominal price in EIA's weekly record. Adjusted for inflation it sits 4.5 percent below the June 2022 peak and 14 percent below the May 2008 peak.

Over the next twelve months the price depends less on crude oil than on two supply disruptions: the closure of the Strait of Hormuz and the collapse of Russian refining. If both continue, retail diesel averages \$6.13 per gallon through September 2027. If the strait re-opens while Russian refining stays down, the average is \$4.94. If both resolve, it is \$4.52. At the spring planting decision the spread between the outer two is \$1.98 per gallon.

The scenarios rest on two measurable relationships. The first links the refining margin to distillate inventories, which behave much like stocks-to-use in a grain market. The second is what is left over once inventories are accounted for, and that residual is where the wars show up.

1 Inventories explain half the margin, and the wars explain the rest

The retail price of diesel divides into three parts: crude oil cost, the refining margin, and taxes and distribution. In the week of September 14, retail diesel of \$6.285 consisted of \$2.66 of crude, a \$2.22 refining margin, and \$1.40 of taxes, distribution, and retail. The February average, before the strait closed, was \$3.72, made up of \$1.68 of crude, a 54-cent margin, and \$1.50 of taxes and distribution. Of the \$2.56 increase since February, crude accounts for 98 cents and the margin for \$1.68, while taxes and distribution fell nearly 10 cents.

The margin is a gross spread rather than refiner profit. Operating costs, obligations under the federal Renewable Fuel Standard, and crude bought at inland discounts all sit between it and what a refiner earns. It is best read as the price signal of a shortage.

Because the margin does most of the work, a diesel forecast is a margin forecast.

Distillate days of supply — inventories divided by recent consumption — is the closest thing the fuel market has to a stocks-to-use ratio, and the relationship between the two has the shape corn producers know. As inventories tighten, price rises, and it rises faster the tighter inventories get. Estimated on weekly data from 2006 through 2025, each 1 percent decline in days of supply goes with a 1.7 percent wider Gulf Coast refining margin. The relationship explains about half the week-to-week variation in the margin, and the estimated sensitivity ranges from 1.2 to 2.1 across subperiods and alternative measures.

That estimate is an association rather than a causal one. Inventories and margins respond jointly to the same shocks, so the figure describes how the two have moved together, not the effect of a barrel of inventory on price by itself.

Figure 1. Diesel margins rise as inventories tighten

Half the variation leaves half unexplained, and 2026 is a year in which the unexplained half dominates. Distillate inventories stood at 28.6 days of supply in February and 28.3 days in August. The refining margin was 62 cents in February and \$2.03 in August. Nearly identical inventories, a margin three times wider.

Dividing the actual margin by the margin that inventories imply gives a multiplier that measures everything inventories do not explain: foreign supply losses, export demand, and the risk that either gets worse. Measured against Brent, that multiplier averaged 2.44 in September 2026, the highest monthly reading in the twenty years of available data; the previous high was 2.13 in June 2022, four months after Russia invaded Ukraine. Single weeks have run wider. The week of September 11 reached 2.53, second only to 3.42 in the week of April 29, 2022.

The benchmark matters for that comparison. Measured against WTI the current multiplier is 2.29, and three months of 2011 were higher, at 2.28 to 2.35. WTI was then landlocked at Cushing and traded far below world crude, which inflated any margin measured against it. Brent, the benchmark for internationally traded crude, is used throughout for that reason.

Figure 2. How far diesel margins sit above what U.S. inventories explain

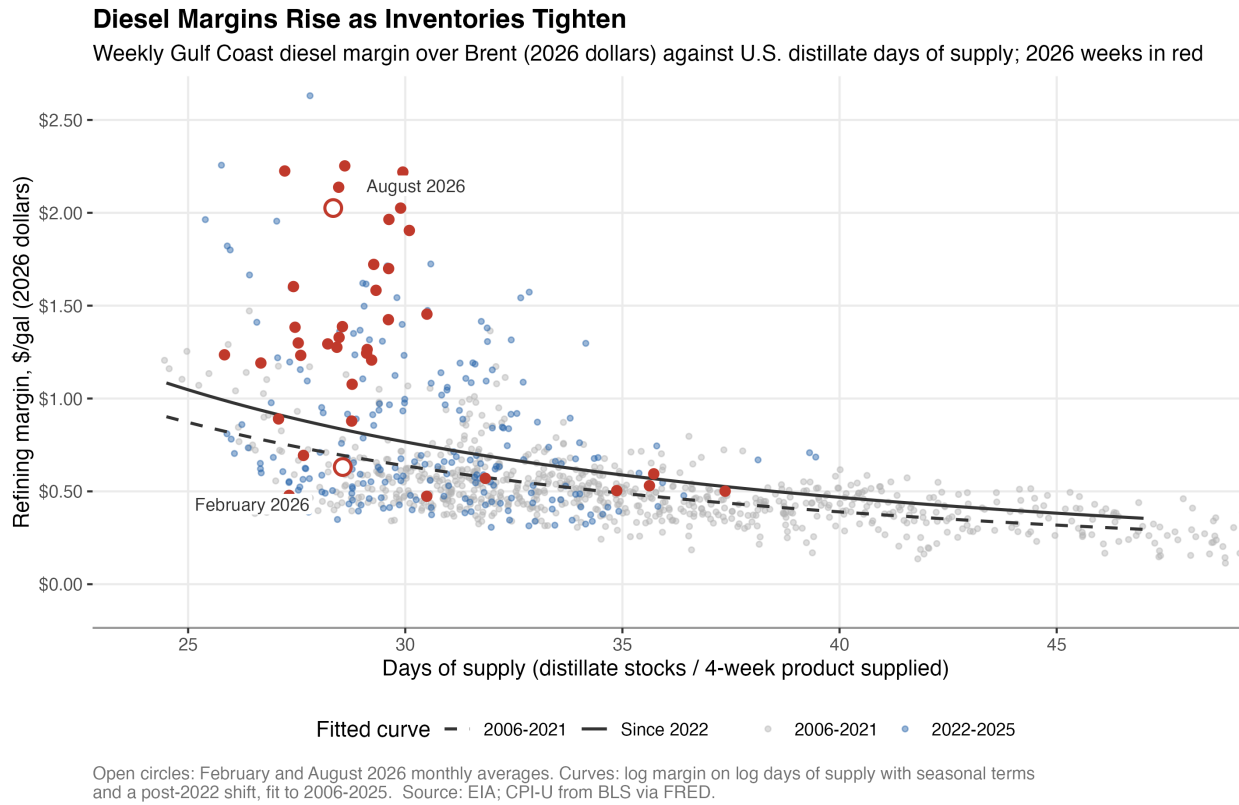


Figure 1: Diesel margin vs days of supply

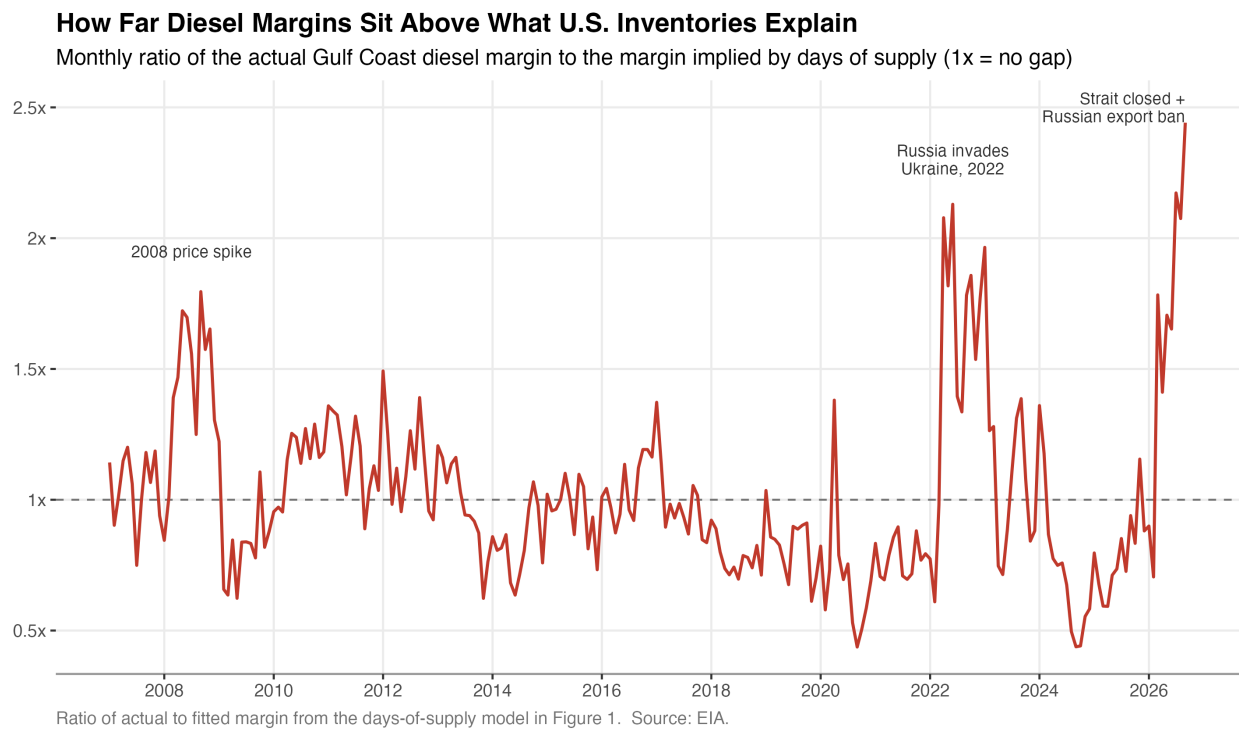


Figure 2: Diesel margin multiplier

The multiplier rose in two steps. It averaged 1.63 from March through June, when the strait was closed but Russian diesel still reached world markets. As a monthly average it has run between 2.08 and 2.44 since July, after Russia banned diesel exports on July 8 and Ukrainian strikes cut deeper into Russian refining. Those two steps are the basis of the scenarios below. The attribution is imperfect: July 8 was also the day the Iran ceasefire collapsed, so the second step mixes the two conflicts.

Deviations of this size do not persist indefinitely. Month to month, the multiplier decays toward normal with a half-life of 2.7 months once the cause is removed. That figure sets the pace at which prices fall in the scenarios where the disruptions end.

2 Inventories are short for the season, and the shortfall has been widening

Distillate stocks rose to 29.9 days of supply in the week of September 11, from 28.6 a week earlier. That reading was still the lowest for that calendar week since 1991, when EIA's weekly consumption data begin, and the sixth consecutive week to set such a low. Against the same week of 2023 through 2025, stocks were 15.3 million barrels short.

Figure 3. Twenty years of distillate days of supply

The level is low but not extreme: 29.9 days sits in the lowest quarter of the past twenty years, above the 24.5-day low of April 2008. What is unusual is the timing. Inventories normally build in late summer ahead of winter, and this year they have not.

Two measurement points matter for reading those figures. Days of supply divides by domestic consumption alone, so with exports running 1.5 to 1.7 million barrels per day, cover is thinner than the number suggests: including exports in the denominator gives 20.4 days rather than 29.9, against a 2023–2025 average of 23.4. And the diesel futures curve is backwardated by \$1.68 per gallon from October to next September, so no one is paid to hold inventory. Low stocks are partly a consequence of the same expectations that set the spot margin, not only a cause of them.

Measured in days against 2023 through 2025, the shortfall has widened by 0.38 days per month since March and by 0.11 days per month since June, a pace the latest week's build slowed. Consumption is not the cause of the drain: four-week product supplied has stayed close to normal all summer and ran 181,000 barrels per day below it in the latest week,

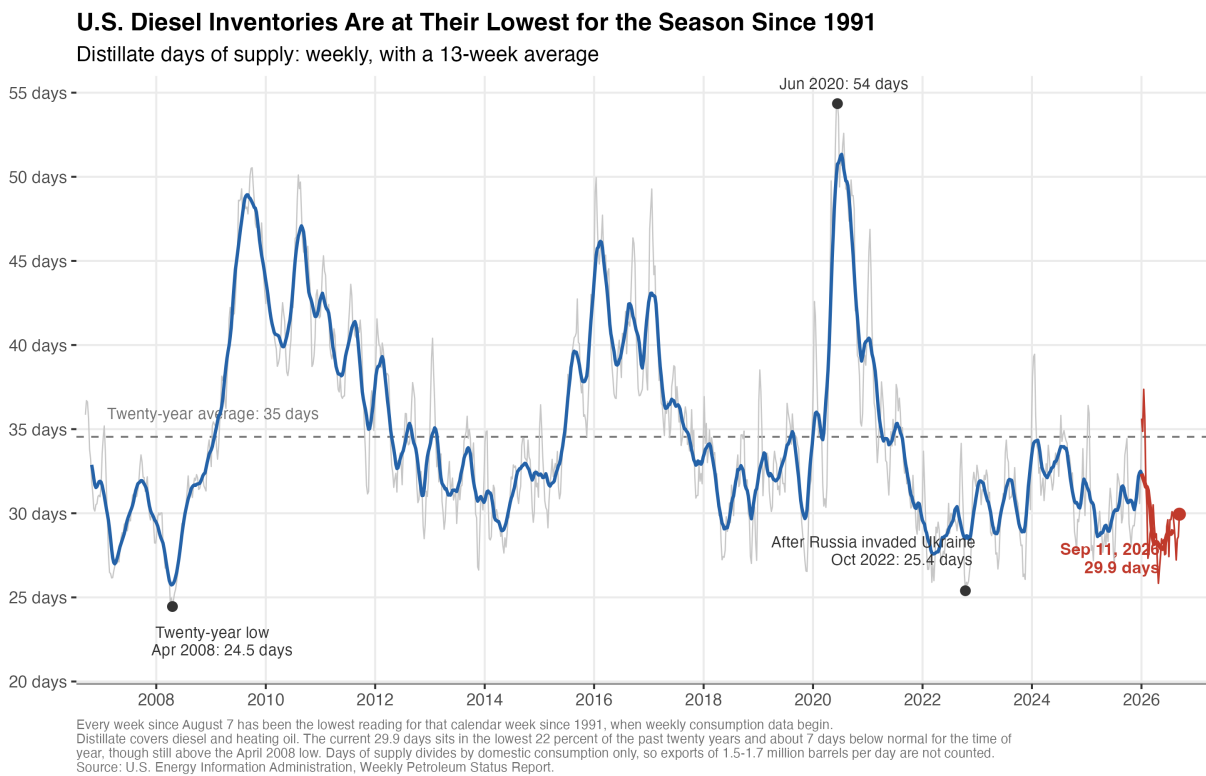


Figure 3: Distillate days of supply, 20 years

which is what price rationing looks like when it starts. EIA's September outlook projects inventories falling to 92.8 million barrels in October.

A continuing drain means continuing price increases. The main scenario below carries the June-to-September pace forward for the full twelve months. At the faster March-to-September pace, the twelve-month average is 25 cents higher and days of supply reach 23.5 by May 2027. The lowest weekly reading since 1991 is 21.8 days, in February 2003, and the model has no experience below that level; near an operating floor the price response is likely steeper than it estimates rather than gentler.

What stops the decline is the price itself. Higher U.S. prices close the export arbitrage, pull barrels back into the domestic market, and ration demand from freight and heating-oil buyers.

3 Three scenarios

Each scenario sets a crude oil path, a disruption premium, and an inventory path. All three share October 2026, because no resolution can take effect that quickly; they assume any resolution takes hold on November 1, 2026.

	Crude oil (Brent)	Disruption premium	Inventory shortfall
Both disruptions continue	\$105 through 2027	Held at the September multiplier	Widens 0.11 days per month
Strait reopens, Russia continues	Falls to \$76 by spring	Strait premium decays, a Russian premium of about 1.45 remains	Narrows to 2 days by April
Both resolve	Falls to \$68 by spring	Both premiums decay, the Russian half at half speed for refinery repairs	Closes by May

Crude in the second and third scenarios is anchored on the pre-war price. Brent averaged \$71 in February 2026 and \$111.83 in the week of September 11. The Russian premium is held in the second scenario because Russian refining does not recover while the strikes continue; in

the third it unwinds more slowly than the strait premium, because damaged refineries take months to repair and EIA expects Russian outages to persist into the first half of 2027.

U.S. retail diesel (\$/gal)	Oct 2026	Dec 2026	Mar 2027	May 2027	Sep 2027	12-month average
Both dis- ruptions continue	\$6.34	\$6.05	\$6.14	\$6.06	\$6.33	\$6.13
Strait reopens, Russia continues	\$6.33	\$5.34	\$4.76	\$4.53	\$4.56	\$4.94
Both resolve	\$6.33	\$5.08	\$4.27	\$3.98	\$3.92	\$4.52
NY Harbor futures, September 15	\$6.43	\$6.17	\$5.65	\$5.33	\$4.94	\$5.62
EIA Short- Term Energy Outlook	\$5.72	\$5.31	\$4.79	\$4.51	\$4.11	\$4.79

Figure 4. Retail diesel under three supply scenarios

October is the tightest month in every scenario. Refinery maintenance season overlaps with harvest demand, and inventories normally fall about 3.5 days from September to October. The three paths differ by a penny in October and about 50 cents in November, and separate in earnest only from December.

The first scenario's crude assumption does substantial work. Holding Brent at \$105 against a futures curve averaging \$90.60 over the same months accounts for 35 cents per gallon of its twelve-month average; with crude on the curve it would average \$5.78 rather than \$6.13. A closed strait is a reason to expect the curve to be wrong about crude, but that expectation is an input to the scenario rather than a finding from it. The same \$105 sits below the \$111.83

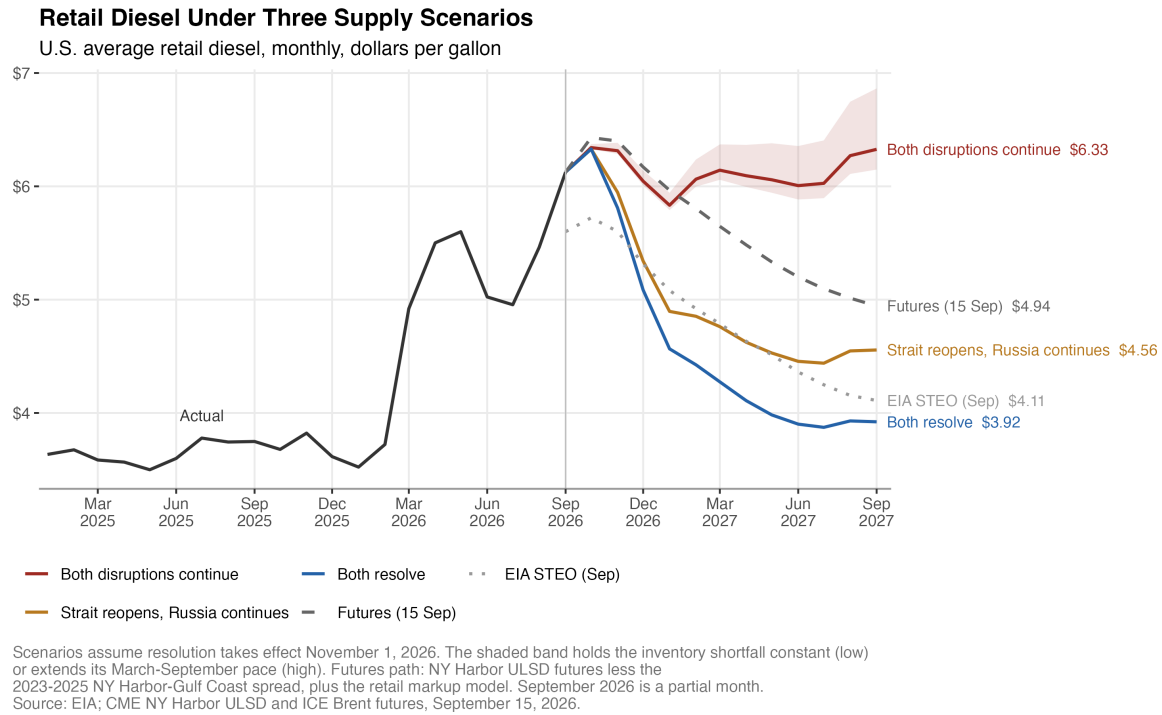


Figure 4: Diesel price scenarios

Brent averaged in the week of September 11, so the scenario also assumes crude eases from its current level while staying far above the curve.

The premium and the inventory shortfall are also not independent. In 2026 they move together — the correlation between the monthly premium and the inventory gap is -0.55 , against -0.21 over 2015 through 2025 — because one disruption drives both. Holding the premium at its September level while extending the drain therefore stacks two expressions of the same force. The shaded band in Figure 4 brackets that choice: its lower edge holds the shortfall at today's level, giving a twelve-month average of \$6.04, and its upper edge extends the faster March-to-September pace, giving \$6.38 and a September 2027 price of \$6.86.

These are conditional paths rather than a probability-weighted forecast. Each states what prices do if a particular supply situation holds, and none of them carries a probability.

4 Tested against the past, the framework misses by at least 38 cents at twelve months

Conditional paths still rest on a model, and that model can be run against history. Starting from every month since 2015, holding the disruption multiplier at its value in that month and then feeding in the crude prices and inventories that actually followed, the framework's error in predicting retail diesel averages 29 cents at three months, 30 cents at six, and 38 cents at twelve. A no-change rule — assuming diesel stays at today's price — misses by 36 cents, 55 cents, and 88 cents over the same horizons.

Those figures are a floor rather than an estimate of forecast uncertainty, because the test hands the model the right answer on crude and inventories. Neither is known twelve months out, and the scenarios above exist precisely because they are not.

The pattern of the misses matters more than their size. The largest errors are underestimates made just before a disruption: a forecast made in September 2025 came in \$1.06 per gallon below what diesel actually cost a year later, because the model had no way to anticipate a strait closure. A premium held constant is the right assumption in a quiet market and too low a one when a new shock lands. That asymmetry argues for treating the upper scenario as the one to plan against.

Set against that, the \$1.98 spread between the outer scenarios next spring is several times the model's own error, so the difference between the scenarios is signal rather than noise. Any single path within them carries at least 38 cents of uncertainty.

5 The futures market prices something between the first two scenarios

NY Harbor diesel futures on September 15 ran from \$5.26 per gallon for October delivery to \$3.59 for September 2027; trading on September 16 left the curve little changed. Paired with Brent futures for the same months, those quotes imply a refining margin of \$2.58 in October, easing to \$1.60 by September 2027. The 2023–2025 average margin was 60 cents.

The market is therefore pricing neither a quick resolution nor an indefinite one. Read as a weighted average of the first two scenarios — which assumes traders are risk-neutral, and

they are not — the curve would put roughly a 60 percent weight on the disruptions continuing through spring, falling to about a fifth by next September.

EIA's September outlook is more optimistic than the futures market, at \$5.07 per gallon for 2026 as a whole and \$4.40 for 2027. That outlook was completed on September 3, before the two most recent weekly price increases, and its inventory projection assumes supply normalizes.

Futures are not unbiased forecasts. Buyers of physical diesel who want price protection pay for it, which tends to hold near contracts above the price that eventually settles. The curve's slope is nonetheless the cleanest available measure of what the market expects, and its message is that the diesel shortage outlasts the crude shock.

6 A refinery outage costs four times more now than in a normal market

ExxonMobil's Joliet refinery, which processes 275,000 barrels per day and supplies about 6 percent of Midwest refining capacity, lost power on Sunday, September 13. As of September 16 a full restart was expected within the week. BP's Whiting refinery, the largest in the Midwest at 440,000 barrels per day, was already partly down for planned maintenance.

A one-month outage at a refinery the size of Joliet removes about 2.2 million barrels of distillate, or 0.6 days of national supply. Priced through the inventory relationship, that is worth about 2 cents per gallon in a normal market and 10 cents under October 2026 conditions. A Whiting-size outage is worth 4 cents against 17, and an outage at a 630,000-barrel-per-day Gulf Coast refinery 5 cents against 25.

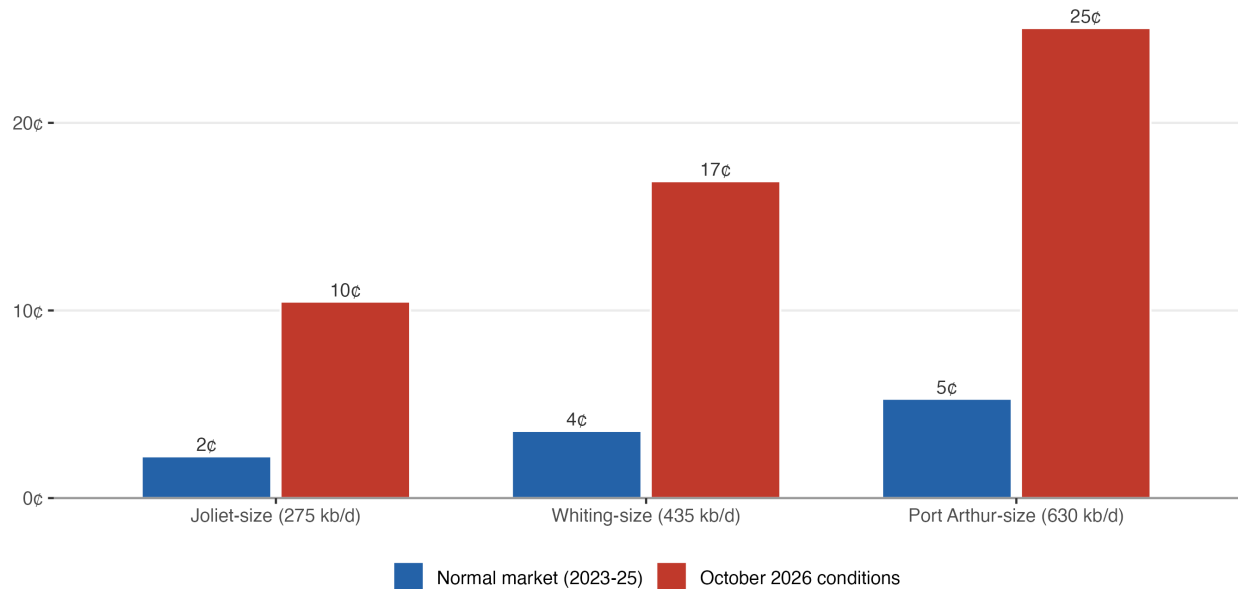
Figure 5. The same refinery outage costs more in a tight market

Two things make the difference. Inventories are lower, so the same barrels are a larger share of the cushion. And the market already carries a premium, which the same percentage change scales up.

History suggests these are conservative figures. Single-refinery outages are usually invisible in the national price: after the permanent closure of the Philadelphia Energy Solutions refinery in June 2019, neither the national margin nor East Coast prices moved beyond the range of ordinary weeks. Hurricane Harvey, which took roughly a quarter of U.S. refining capacity

The Same Refinery Outage Costs More in a Tight Market

Estimated national effect of a one-month outage on the Gulf Coast diesel margin, cents per gallon



Lost distillate = capacity x 95% utilization x U.S. distillate yield x 30 days; priced with the days-of-supply elasticity. Regional effects near the outage run larger. Source: EIA; author's calculations.

Figure 5: Refinery outage effect

offline in August 2017, widened the Gulf Coast margin 16 cents. The largest single-refinery response came after the Whiting fire of August 2022, in a tight market, when the margin rose 31 cents over the following weeks.

Regional effects are more reliable than national ones. After the Whiting fire in 2022, the Whiting power outage in February 2024, and the Joliet storm outage in July 2024, Midwest retail diesel rose 5 to 10 cents relative to the national average, more than the usual six-week variation in that spread, and the gap closed within two to five weeks. For a farm buying 4 gallons per acre, a 10-cent national move is 40 cents per corn acre, and a regional move on top of it roughly doubles that. Both are small next to the \$1.98 spread between scenarios.

7 Deferred maintenance has moved risk into 2027

Refiners have been running through the season when they normally slow down. U.S. refinery utilization was 96.8 percent in the week of September 11, against 92.7 percent in the same

week of 2022 through 2025, and it has exceeded the recent norm in every week since early August. Margins above \$2 per gallon are a strong incentive to postpone a turnaround.

Postponed work does not disappear. It returns in the spring turnaround season, in February and March, immediately before planting. Refinery inputs in February run about 950,000 barrels per day below the annual average in recent years.

The seasonal effect on price has grown with the market's tightness. The October refining margin ran 3.5 cents above the annual average from 2010 through 2019 and 16.8 cents above it from 2022 through 2025. Applied to current conditions, the normal September-to-October inventory draw is worth about 26 cents per gallon this year, against about 7 cents in a market with normal inventories and no premium.

An additional 500,000 barrels per day offline for six weeks next spring would add about 25 cents per gallon under the first scenario, 15 cents under the second, and 11 cents under the third. Running refineries at 97 percent through the fall also raises the odds of the unplanned outages priced above.

Refiners are already producing as much diesel as their equipment allows. With the diesel margin at \$2.22 and the gasoline margin at 97 cents, the incentive is to run in maximum-distillate mode, and jet fuel competes for the same middle part of the barrel. That limits the supply response the historical relationship assumes.

8 What this means for a farm fuel budget

Farm diesel is exempt from federal and most state highway fuel taxes, which account for roughly 60 cents of the retail price. Those taxes are fixed per gallon, so differences between scenarios apply to dyed farm diesel in full. Midwest retail diesel has averaged about 7 cents below the national price over the past three years and rose \$2.57 from February to the week of September 14, against \$2.56 nationally.

At the 4 gallons per acre in the K-State North Central Kansas corn budget, spring 2027 fuel costs \$24.40 per acre if both disruptions continue, \$18.56 if the strait reopens, and \$16.48 if both resolve. February 2026 prices would have put it at \$14.88. Across a farm using 10,000 gallons a year, the gap between the first and third scenarios is about \$16,100.

The scenarios differ in shape as well as level. In the two resolution scenarios, prices fall through the winter and the cheapest fuel of the next twelve months arrives after planting.

In the first, prices rise through spring and summer and the cheapest month is January. Fuel contracted now is protected if the disruptions continue and costs about \$1.75 per gallon more than the twelve-month average of the third scenario.

One adjustment works against waiting. Retail diesel falls more slowly than it rises: the retail markup narrows about 17 cents per dollar of wholesale increase and 47 cents per dollar of decrease, though three years of monthly data cannot reject symmetry. Building that asymmetry into the scenarios raises the resolution paths by up to 11 cents per gallon in the fastest-falling months, while leaving the twelve-month averages within a penny.

Fall harvest fuel is a separate question with a shorter horizon. October is the tightest month in every scenario, and the three paths are within a penny of each other that month.

9 What would change this view

A Russia-Ukraine energy truce is the fastest possible source of relief. President Trump announced one on September 14. Neither government confirmed it, and Ukraine struck the Syzran refinery the same night. Negotiations are expected to continue, possibly in October.

Reopening the Strait of Hormuz would move crude first and diesel second. Iran and several Gulf states have been negotiating through Oman over shipping lanes, and Iran's foreign minister said on September 13 that reopening depends on U.S. compliance with the terms of the expired Islamabad memorandum. Gulf refineries still need to restart export flows after any reopening, which is why the second scenario pays off in diesel more slowly than in crude.

Demand is the quiet variable, and it has started to move: consumption ran 181,000 barrels per day below normal in the latest week. Diesel above \$6 per gallon rations itself through slower freight activity and fuel switching, and a mild Northern Hemisphere winter would cut heating demand at the same time. Both would close the inventory gap faster than any scenario assumes.

The largest modeling caveat is the split of the current premium between the two conflicts. It relies on the premium having risen in two identifiable steps, and the second step coincided with both the Russian export ban and the collapse of the Iran ceasefire. If more of the premium belongs to the strait than assumed here, the second scenario is too high; if more belongs to Russia, it is too low.

10 Data and methods

Prices are EIA weekly averages for on-highway diesel, national and Midwest (PADD 2), and EIA spot prices for U.S. Gulf Coast ultra-low sulfur diesel and Brent crude. Retail prices, reported for Mondays, are matched to spot prices for the preceding Friday. The refining margin is the Gulf Coast spot price less Brent divided by 42. Days of supply are distillate stocks divided by four-week average product supplied; EIA's weekly distillate series include renewable diesel blended into the distillate pool, production of which is expected to rise from 190,000 barrels per day in 2025 to about 237,000 in 2026.

The inventory relationship regresses the logarithm of the inflation-adjusted margin on the logarithm of days of supply, with seasonal terms and a shift for 2022 and later, using weekly data from July 2006 through December 2025 and Newey-West standard errors. The estimated elasticity is -1.71 with a standard error of 0.25. Alternative specifications — 2006–2021 only, 2010–2021, 2022–2025, days of supply including exports, and days of supply relative to a five-year seasonal norm — give -1.2 to -2.1 . The multiplier is the ratio of the actual margin to the fitted margin, averaged by month.

Scenario retail prices add a markup to the projected Gulf Coast wholesale price, estimated on monthly data for 2023 through 2025: \$1.42 per gallon, less 32 percent of the current month's change in the wholesale price and 6 percent of the previous month's. Estimated separately for increases and decreases, the coefficients are 17 and 47 cents per dollar, with a p-value of 0.13 for equality. Crude paths are stated in Brent. Gulf Coast diesel tracked Brent more closely than WTI before 2020, when U.S. crude was constrained by pipeline capacity; since 2022 the two work about equally well, and repeating the exercise with WTI changes the twelve-month averages by 3 to 6 cents.

The out-of-sample test re-estimates the inventory relationship at each origin month from January 2015 through September 2025, holds the multiplier at its origin value, and supplies actual later Brent prices and actual later days of supply, so it isolates the margin model and the retail markup from the scenario assumptions.

Refinery outage effects assume lost distillate equal to capacity times 95 percent utilization times the 2025 U.S. distillate yield of 29.6 percent of refinery input, priced through the inventory elasticity. Historical outage effects are measured as the largest rise in the six weeks after the event, compared against the distribution of that same statistic for every week from 2015 through 2025. Futures prices are NY Harbor ULSD quotes for September

15, 2026 and ICE Brent settlements for the same date, converted to a Gulf Coast basis using the 2023–2025 average spread. Inflation adjustment uses the CPI-U.

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